CENTRAL INTELLIGENCE AGENCY

50X1-HUM

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COUNTRY USSR

REPORT

SUBJECT Soviet Fishing Vessel, Mud Hopper, and Possible Harbor Tug Specifications

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REFERENCES

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THIS IS UNEVALUATED INFORMATION. SOURCE GRADINGS ARE DEFINITIVE. APPRAISAL OF CONTENT IS TENTATIVE

1. Fish Refrigerator, 190-Ton Capacity, specifications and diagrams, 47 pages in English. 50X1-HUM

2. Medium Fishing Trawler, SRTM-502, 10-page brochure in Russian and English including two diagrams.

3. Seiner, SChS-150, five-page brochure in Russian and English including one photograph and one diagram. Also included is a 78-page specification book in English with one section which consists of six diagrams and specifications for the electrical equipment.

4. Self-Propelled Heavy Mud Hopper Barge, 7113-90-7, side view and layout of main deck.

5. Specifications and diagrams for possible harbor tug R51. Two large diagrams in Russian and English.

Distribution of Attachments for Retention:

50X1-HUM

ORR: Attachments 1 through 5 (1 copy)
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SECTION V

H u l l

1. Materials 30

2. Hull framing and frame spacing 30

SPECIFICATION

Section I

I. Design of the ship

The vessel is designed for fishing with the aid of a purse-seine, a drift-net or a fish pump using electric light (to be agreed upon with the Buyer).

II. General description and class

It is a single-deck, single-screw Diesel motor ship of shelter type with a deck-house aft of amidships and with a rotary cable platform aft.

The steel hull of the vessel is of welded construction and built to the Class of the Register of Shipping of the U.S.S.R.

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III. Area of navigation

The ship is able to sail within 100 miles off shore during the entire period of navigation.

IV. Principal dimensions

1. Length, overall	- 25.23 m
2. Length b. .	- 22.00 m
3. Breadth amidships	- 5.6 m
4. Depth (minimum)	- 2.8 m
5. Loaded displacement	- 124.8 t
6. Weight	- 33.78 t

7. Draught midships (including the keel)	- 2.34 m
8. Fore draught (including keel)	- 2.13 m
9. Aft draught (including keel)	- 2.57 m
10. Fish hold capacity	- 47.0 m^3
11. Main engine - Diesel engine type 3G8V-224 developing	- 150 H.P.
12. Number of crew	- 12
13. Trim by the stern	- 0.6 m
14. Bilge rise at ship side	- 0.9 m

V. Main engine and screw propeller

A single-acting, four-stroke, six cylinder, airless injection, vertical non-reversible Diesel engine 3G8V-224, with a reversing reduction gear, developing 150 H.P. at 750 r.p.m.

There is one four-bladed screw propeller made of brass, dia. 1330 mm 375 r.p.m.

VI. Speed

With the above screw propeller in calm and deep water at an engine output of 150 H.P. the speed is to be 9 knots.

VII. Crew and arrangement

Ship's crew:

Captain	- 1
Engineer	- 1
Navigating officer	- 1
Assistant engineer	- 1
Cook	- 1

Sailors - 7

Total - 12

The captain's cabin is arranged in the deck house on starboard side. The engineer's cabin is in the aft orlop on starboard side. Six persons are accommodated in the fore orlop and four in the aft orlop.

VIII. Fuel, oil, water and provision stores

Fuel and oil supply should provide for continuous main engine operation during 150 hours, including reserve.

The fuel is stored in the side tanks of the ship, in the engine room, while the oil is stored in a built-in tank.

Fresh water and provision stores are designed for 9 days, including reserve, the fresh water being stored in tanks under the fore orlop ceiling. The provision is stored in special chests on the house top and in the afterpeak.

IX. Deadweight

The deadweight of the ship is calculated for the following loads:

I - when leaving for fishing grounds with 100% of stores;

II - when returning from the fishing grounds with 100% of cargo and 25% of stores;

III- when returning from fishing grounds without cargo and with 25% of stores;

IV - at fishing with full fish hold, 25% of stores, the purse-seine being overboard;

V - fishing with purse-seine.

VI - fishing with the aid of a fishing pump;

VII- fishing with a drift-net

The components of the deadweight are as follows:

	Loads						
	I	II	III	IV	V	VI	VII
1. Fuel oil	4.96	1.24	1.24	1.24	1.24	1.24	1.24
2. Oil	0.24	0.08	0.08	0.08	0.08	0.08	0.08
3. Fresh water	3.99	1.00	1.00	1.00	1.00	1.00	1.00
4. Coal	0.50	0.13	0.13	0.13	0.13	0.13	0.13
5. Crew with luggage	1.20	1.20	1.20	1.20	1.20	1.20	1.20
6. Provision	0.50	0.13	0.13	0.13	0.13	0.13	0.13
7. Fishing nets	5.00	5.00	5.00	-	-	-	2.50
8. Ice and salt	7.00	-	3.00	-	3.00	-	-
9. Cargo	-	25.0	-	25.0	2.0	9.00	3.00
10. Net on the boom	-	-	-	-	0.15	-	-
Total:	23.48	33.78	11.78	28.78	8.93	12.78	9.28

X. Displacement, draught, trim and stability

The following displacement, draught, trim and stability conform to the above-mentioned cases of loading:

	Unit	Sym-bol	Loads I	II	III	IV	V	VI	VII
Displacement	t	D	114.5	124.78	102.78	119.78	100.59	104.3	99.93
Draught amid-ships incl. keel	m	T_M	2.23	2.34	2.00	2.30	1.92	2.13	2.07
Trim	m	ΔT	-0.68	-0.44	-0.97	-0.02	0.0	0.42	-0.67
Bow draught incl.keel	m	T_B	1.89	2.12	1.61	2.29	1.92	1.92	1.73
Art draught incl.keel	m	T_K	2.57	2.56	2.58	2.31	1.92	2.34	2.40
Metacentric height, min.	m	h	0.70	0.71	0.61	0.78	0.68	0.49	0.57
Heeling moment for 1°	t/m	m	1.40	1.54	1.10	1.63	1.19	0.90	0.99
Moment of trim for 1 cm	t/m	mr	1.12	1.18	1.05	1.20	1.03	1.06	1.02

Displacement, draught, trim and stability of the seiner are ascertained during inclining experiment with the first vessel.

II. GENERAL ARRANGEMENT

1. Inside the hull

The hull of the vessel is divided by five watertight bulkheads into six compartments.

FIRST COMPARTMENT from stem to the bulkhead on the 5th frame. Forepeak. A chain locker is fitted at the bulkhead. Shelves are made at the sides. A paint locker is arranged in the space between the stem and the frame. There is natural ventilation through gooseneck ventilators Ø 80 mm.

SECOND COMPARTMENT between the 5th and the 14th frame. The six-berth orlop 23 m^3 is arranged there furnished with an inclined ladder and a steel watertight door with bolt bars.

Three side dead lights Ø 250 mm with storm lids. Glass 20 mm thick.

Natural ventilation through a supply fan Ø 150 mm.

Water heating by heaters.

THIRD COMPARTMENT between the 14th and 23rd frame. A fish hold 47 m^3 is arranged there to store the fish in bulk. Removable bulkheads and horizontal shelving are provided for. A cargo hatch 1400 x 1520 mm. Natural ventilation through 4 gooseneck ventilators Ø 80 mm.

FOURTH COMPARTMENT. Between the 23rd and the 32nd frame there is the engine room 51 m^3, furnished with a steel watertight door and a ladder. Emergency exit through a skylight on the port side.

There is natural illumination through four skylights. Two skylights of folding type have an arrangement for closing them from the engine room. The other two skylights are of dead type.

There is natural ventilation through 2 supply fans Ø 250 mm

and through the funnel casing.

FIFTH COMPARTMENT. Between the 32nd and 39th frame there are the four-berth orlop 19.3 m^3 and engineer's cabin 6.6 m^3, with a ladder and a steel watertight door with bolt bars. Access to the engineer's cabin is through the orlop.

The orlop and the cabin have deck lights Ø 200 mm.

There is a mushroom vent Ø 150 mm in the orlop and a fan of Ø 100 mm in the engineer's cabin.

Water heating by heaters.

SIXTH COMPARTMENT - after peak. Between the 39th frame and the stern.

This compartment is designed for boatswain's and other stores. A rudder quadrant with a reduction gear, an electric motor with a net lifting gear and a relieving tackle, are placed in the after peak.

Access to the after peak is through the aft orlop. A steel watertight door 550 x 1000 mm is locked and the key is kept by the captain.

There are shelves and lockers in the compartment.

There is natural ventilation through two gooseneck ventilators Ø 50.

2. On the deck

In the fore part of the deck at the bulwark there is arranged a chock with a fair leader on the starboard side and the same without a fair leader on the portside.

A common anchor 50 kg. is stowed on the deck. A reel for the steel wire of the anchor is fitted on the bulwark on the starboard side. Reels for hemp and steel mooring and towing wires

are fitted on both sides of the bulwark.

On the deck there are arranged: hawse pipes; a gooseneck ventilator from the fore peak; slip stoppers; el. windlass; hatch coaming with a watertight hatch cover; bollards; controller of the el. windlass; entrance to the aft orlop and a ventilator head from the orlop; the main mast; a working boat is installed on boat chocks on the port side; fishing el. winch; a cargo hatch; a fish pump with a controller; sky lights to the engine room on both sides; the deckhouse; a coaling scuttle with a watertight cover; the controller of the net lifting machine; upright bollards at the bulwark; deck lights of the aft orlop and the rotary seine platform.

3. In the deckhouse

The wheel house, the captain's cabin, radio room, engine casing, entrance to the aft orlop, entrance to the engine room, galley, J.C., a wash room and a drying room are arranged in the deckhouse.

The doors of the aft orlop and of the engine room are of steel, watertight. Other doors are made of wood.

There are three sliding windows in the fore wall of the wheel house. There are two dead lights in the side walls of the wheel house and two in the aft wall. Two bull's eyes in the door. All windows are 400 x 600 mm. Bull's eyes Ø 200 mm.

Dead lights of Ø 200 mm in the doors of all other accommodations and dead lights of Ø 200 mm in the walls of the deck house.

Glass 10 mm thick.

The galley has a sky light on top of the deckhouse.

The galley, W.C., wash rooms, captain's cabin and radio room are naturally ventilated through mushroom ventilators Ø 150 mm.

Natural ventilation of drying room through Ø 100 mm. shutters.

Water heating by heaters.

4. On top of the deckhouse

A steering engine, speaking tubes, searchlights, motor car lamp, engine room telegraph, el. sirene, side lights, the main compass and a cabinet for the signal flags, are arranged on top of the wheel house. There is a ladder to the deckhouse top.

On top of the deckhouse there are arranged: false-funnel, a mizen mast, two life-rafts, motor-car lamp sky light of the galley, ventilator heads, four life buoys and the stern light.

There is a ladder on the aft wall of the deckhouse.

Section II

INSULATION, FINISHING, EQUIPMENT AND DECK FITTINGS

1. Insulation and finishing of living and service accommodations

I. Wheel house

The fore and side walls, doors and ceilings are covered with expansite slabs 25 mm thick and decorative plywood 5 mm. thick. There is an air layer between the expansite and the plywood.

There are wooden gratings above the steel deck.

2. Radio room

The walls, doors and ceilings are covered with expansite slabs 50 mm and plywood 5 mm. There is perhamin between the expansite and the plywood. Above the steel deck there is a flooring of grooved and tongued pine wood planks 40 mm and a linoleum covering 5 mm. thick.

3. The captain's cabin

The outside wall, door and ceiling are covered with 40 mm. expansite slabs and decorative plywood 5 mm. thick. Expansite strips are of 10 mm. between the angles and the plywood.

The fore, inside and aft walls are covered from the cabin side with 25 mm expansite slabs and plywood 5 mm. thick.

The engine casing is covered with 40 mm asbestos insulation from the side of the cabin. The insulation is fastened by steel pins and covered with plywood 5 mm. thick.

There is an air layer between the expansite and the plywood.

Grooved and tongued pinewood planks 40 mm. thick on the steel deck are covered with linoleum 5 mm. thick.

4. Orlops

The outside walls are covered with expansite slabs 40 mm and plywood 5 mm. thick and have 10 mm. expansite strips between them.

The transverse bulkheads of the aft orlop, fore transverse bulkhead of the fore orlop and ceilings are covered with 25 mm expansite slabs from the orlop side and plywood 5 mm. thick.

The transverse bulkhead of the fore orlop is covered with 5 mm. plywood.

There is an air layer between the expansite slabs and the plywood.

The orlop flooring is of grooved and tongued pinewood planks 50 mm thick, covered with 5 mm. linoleum.

5. Fore orlop entrance

Covered inside with 25 mm. expansite slabs and calico glued on.

6. Aft orlop entrance

The outside walls and ceilings are covered with one layer of granulated cork 5 mm. thick with calico glued on.

7. Engine room entrance

Outside wall and ceiling are covered with one layer of

ranulated cork 5 mm. thick and calico.

8. Wash room and W.C.

The outside wall and ceiling are covered with one layer of granulated cork 5 mm. thick. Calico is glued to the cork with " ЛК-2 " glue.

9. Galley

The outside walls and ceiling are covered with one layer of granulated cork 5 mm and calico.

10. Drying room

The walls and ceiling are covered inside with expansite slabs 40 mm. thick, and calico.

The steel deck has a removable wooden grating on it.

11. Fish hold insulation

The outside walls and transverse bulkheads of the fish hold are covered with 60 mm expansite slabs and grooved and tongued pinewood planks 19 mm. thick, painted with coal tar.

There is perhamin between the expansite slabs and the planks.

Between the wings and planks there is a filling of granulated expansite on bitumastic.

The hold flooring is made of grooved and tongued pinewood planks 30 mm. thick, covered with 35 mm. expansite slabs and grooved and tongued pinewood planks of 19 mm. above it, the planks being painted with coal tar.

There is perhamin between the expansite slabs and the planks.

In addition to the above, the vertical walls are cement-washed 15–20 mm.

The fish hold ceiling is covered with 65 mm. expansite slabs and grooved and tongued pinewood planks 19 mm. thick, with perhamin between them.

Between the wings and boards there is a filling of granulated expansite on bitumastic.

The hatch coaming of the fish hold is covered inside with 70 mm expansite slabs and two layers of grooved and tongued pinewood planks of 13 mm each.

There is perhamin between the planking which is covered with galvanized iron.

The hatch cover of the fish hold is made of grooved and tongued pinewood planks 50 mm. thick, the lower surface being covered with 50 mm expansite slabs and with grooved and tongued pinewood planks of 19 mm.

III. FURNITURE AND EQUIPMENT OF LIVING QUARTERS AND SERVICE

Accommodations

The furniture and equipment is to be in accordance with the trimming of the premises.

1. Wheel house

The wheel house accomodates a steering engine, main engine control post, engine room telegraph, speaking tubes, ship's clock,

aneroid-barometer, inclinometer of pendulum type with a scale, signal lights station, a cabinet for the binocular, a shelf for charts, a folding seating bench and a chart table. In the aft-wall there is a window into the radio-room.

The floor of the wheel house is carpeted, except at the steering wheel where there is a wooden grate underfoot.

There are silk curtains on the windows.

2. Radio room

The radio-room accomodates the instruments and apparatus of radio communication (in accordance with the specification), a writing desk, armchair, clothes-peg, carafe and glass holders, a writing-set, ash tray and a thermometer.

There is a carpet on the floor and silk curtains on the illuminators.

3. Captain's cabin

In this cabin there is a folding iron berth with plush curtains, a sofa, a wardrobe with a mirror, a writing desk, arm-chair, a bookshelf, carafe and glass holders two frames for a portrait and instructions, a clothes-peg, ship's clock, barometer, thermometer, a writing-set, ash tray, a safe for valuable papers.

The wardrobe and sofa have sliding lockers.

The illuminators have silk curtains on them and the floor is covered with a carpet.

4. Engineers cabin

The cabin is furnished with a folding iron berth with

lush curtains, a wardrobe with a mirror and sliding lockers, a writing-desk, armchair, bookshelf, carafe and glass holders, two frames for a portrait and instructions, a clothes-peg , ship's clock, a thermometer, a writing-set and an ash tray.

The illuminators have silk curtains on them, the floor is covered with a carpet.

5. Fore orlop for 6 persons

Here there are six upper and lower iron berths, a table, a bench, two wardrobes, a cabinet for toilet articles, four folding stools, carafe and glass holders, a bookshelf, a clothes-peg, a mirror, frames for a portrait and instructions, as well as a ship's clock.

There are lockers under the lower berths.

The upper berths are of folding type; all the berths have plush curtains. There are silk curtains on the illuminators.

6. Aft orlop for 4 persons

In the aft orlop there are three lower iron berths and one upper folding berth, a table, two benches, two folding stools, four wardrobes with sliding lockers, carafe and glass holders, a bookshelf, ship's clock, a clothes-peg, a mirror, frames for a portrait and instructions.

There are lockers under the lower berths. The berths are provided with plush curtains and there are silk curtains on the illuminators.

7. Wash room and W.C.

There is a faience wash basin, a shower, a bench, a

clothes-peg and an expansion tank in the wash-room. A W.C. bowl, paper-holder, storm rails, sea water hand pump and a service tank of sea water in the W.C.

The floor is cemented and covered with tiles. There is a wooden crate near the door.

8. Galley

The galley is furnished with a range, a combined table-cupboard- cockery washer, shelves for galley equipment, a provision cabinet, a coal box, a hand pump, a folding stool and an ash bucket.

The floor is cemented and covered with tiles.

9. Drying room

In the drying-room there is a bar with hooks for hanging the working clothes.

10. Engine room

The engine room is to be furnished in accordance with the machinery and electrical equipment specifications.

11. Fore and after peak

There are shelves for the ship's inventory in the fore peak, and shelves for the boatswain's inventory and cases for food stores in the after peak.

There is a wooden ceiling in the after and fore peak.

IV. FISH HOLD EQUIPMENT

The fish hold is equipped with removable bulkheads, horizontal shelving and a loose vertical steel ladder.

V. DECK FITTINGS

1. Guard rails

Guard rails are installed on the deck of the deckhouse. There are rail stanchions 900 mm high, with three rails.

2. Storm rails

There are storm rails on the outside walls of the deckhouse, in the galley, wash-room and W.C.

3. Windows and illuminators

In the wheel house there are three sliding and four fixed windows 400 x 600 mm, and eight dead side-lights Ø 200 mm, with storm lids.

Three dead side-lights Ø 250 mm with storm lids in the fore orlop.

There are four dead deck-lights in the after orlop and engineer's cabin, Ø 200 mm with storm lids and rod guards on the deck.

4. Sky lights

Sky lights are provided for over the engine room and galley.

5. Doors

There are two oak doors in the wheel house, 550 x 1700 mm, with dead illuminators.

There is an oak door with a dead illuminator, sound insulated, 600 x 1400 mm, in the radio room.

There are doors made of oak, with dead illuminators, 600 x 1400 mm, in the captain's cabin, engineer's cabin, the galley, drying room and wash-room.

There is a light steel door, 550 x 1400 mm, in the W.C.

There are watertight doors with illuminators, 600 x 1400 mm, in the fore orlop entrance, engine room entrance, after orlop entrance and in the after peak.

There are steel doors 500 x 500 mm in the lantern room and converter room.

6. Ladders

Side ladders, 300 mm wide, are provided in the fore peak, and the fuel tanks in the engine room.

There are inclined wooden ladders 700 and 650 mm wide with rails in the after and fore orlop.

There is an inclined steel ladder 500 mm wide in the engine room, 600 mm wide to the top of the wheel house and 550 mm wide to the wheel house.

A removable vertical steel ladder 300 mm wide, is provided in the fish hold.

There is a vertical ladder 400 mm wide on the aft wall of the deckhouse, to the top of the deckhouse.

SECTION III

I. SHIP'S ARRANGEMENTS AND DRIVING MECHANISMS

1. Anchors

Anchors, chains and steel ropes are furnished in accordance with the Rules and Regulations of the Register of Shipping of the U.S.S.R., 1956.

There are two bower Hall anchors, 200 kg each.

The anchor chains are 100 and 75 m in length.

One stop anchor, a common anchor 50 kg. fitted with a steel rope Ø 11 mm, 50 m long.

There is a windlass driven by a D.C. waterproof el. motor with a built-in electro-magnetic disc brake, 3.2 kW per half an hour, 1440 r.p.m., 220 V.

The bower anchors are stowed in the side welded hawse pipes. The stop anchor is fixed on a pad in the fore part of the deck.

Housing chain stoppers are provided for.

The side and chain pipes are of steel. The chain pipes have storm flaps.

2. Rudder

The rudder is of balanced type, streamlined, welded of steel sheets 6 mm, with an area of about 1.39 m^2, with a rudder stock of two parts. The rudder quadrant is R=908 mm, of cast steel. Steel limiters provide for rudder swinging 34° to either side. Rudder control is effected from the wheel house and from the bridge with the aid of a two tier steering engine.

The steering engine provides for from hard over to hard

[redacted]

within 30 sec. at a stress on the whipstaff of about 5 kg.

Shaft gearing is provided from the steering engine to the rudder quadrant.

3. Mooring equipment

Two all-welded cross bollards Ø 102 are installed in the fore part on the deck.

Two all-welded upright bollards Ø 102 are installed at either side.

Four mooring pipes are fitted in the bulwark.

There is a mooring hemp rope 75 mm circ. and 75 m long, and a Ø 12.5 mm towing steel wire 100 m long.

4. Working boat and life-saving appliances

One working boat 4 m long is fixed on the deck on the port side. Hanging and lowering is effected by a cargo derrick to either side. Life-saving appliances include two life rafts (for 10 persons each), a life-belt for each member of the crew and four life-buoys.

5. Masts and cargo gear

One wooden main mast is installed on the deck and a mizen mast on the deckhouse top.

Steel wire Ø 19 mm is used for main stay and mizen mast standing rigging.

Steel wire Ø 13.5 mm is used for topmast stay main shrouds, topmast shrouds and runner and topping lift.

Cargo handling equipment includes:

A seine winch complete with gipsy heads for fishing with a purse seine and with cargo drums for cargo handling operations, for fishing with drift nets and when fishing with fish pump and cone nets.

The maximum pull at two gipsy heads is 2000 kg, at operation with cargo drums 550 kg on each drum. The seine winch is driven by an electric motor.

There is a steel cargo derrick, with a lifting capacity of 1000 kg.

On agreement with the Buyer, the cargo handling equipment may be completed with two derricks 7 m long Ø 120 x 6, mounted on one common derrick hoop for fishing with cone nets.

6. Fishing Equipment

The fishing equipment of the seiner provides for fishing with a purse seine and drift net, and with a fish pump, cone net and a purse seine when using electric light.

The fishing equipment includes:

1. Rotary seine platform in the aft part of the ship.

The platform can turn through 360°.

In the platform there are built:

a) Purse seine lifting machine with an el.motor 6.5 kW, 220 V. Pull 725 kg, speed 22.7 m/min.

b) Wooden ribbed roller Ø 250 mm, 4.5 m long.

c) Fishing reel.

2. Seine winch designed to heave in purse seine wires and to lower and lift hoses of the fish pump as well as the cone net. The seine winch is driven by an el.motor, 11 kW, 220 V.

Maximum pull on two gipsy heads 2000 kg, speed 10 to 60

m/min.

3. A beam with two snatch-blocks installed on the bulwark, starboard side.

4. Loose net lifting roller.

5. Chock with fair leader.

6. Fish pumping arrangement consisting of a fish pump, el. motor 8 kW and a device draining water from the fish. The arrangement is designed to unload fish from the purse seine and for fishing with a fish pump, using electric light.

7. Cone net with the lamps of underwater lighting mounted on a ring of the cone net.

8. Working boat.

II. SIGNALLING AND COMMUNICATION EQUIPMENT

1. Visual and sound signalling

Flags, a searchlight and signal lights are provided for visual signalling in accordance with the Rules and Regulations of the Register of Shipping of the U.S.S.R.

All signal lights are electric. In addition to the above, the vessel is equipped with a set of spare signal lights with piroelectricity.

Sound signalling is provided for by an air typhoon and a month horn.

III. COMMUNICATION IN THE SHIP

1. Engine room telegraph

1. An order and reply engine room telegraph consisting of an ordering terminal apparatus mounted on a column with dial Ø150

mm, an ordering intermediate apparatus with a dial Ø 150 mm and a receiving apparatus with a 200 mm dial.

The connecting wires are protected by casings of steel sheets.

2. Speaking tubes

Speaking tubes connect the wheel house and the navigating bridge with the engine room, and the wheel house with the post of the emergency rudder control in the after peak.

3. Signal bells

Alarm signal bells are provided for.

SECTION IV

I. EQUIPMENT

Deck fittings, living accommodation and other inventory are provided in accordance with the list of the ship's equipment.

II. INSCRIPTIONS AND THE NAME OF THE VESSEL

The name or number is to be inscribed on the ship's side.

Door-plates are to be attached with brass screws on the entrances of all living and service accommodations.

LIST OF TECHNICAL DOCUMENTS TO BE SUPPLIED

TOGETHER WITH THE VESSEL

1. Specification
2. General arrangement. Side view.
3. General arrangement. Elevation.
4. General arrangement. Deck and hold plan.
5. Lines plan.
6. Hull calculation and data pertaining to the stability of the vessel.
7. Curve-graphs. Details of the lines plan.
8. Specification of fishing equipment.
9. Scheme of watertight compartments.
10. Constructive midship frame.
11. Constructive drawing.
12. Bedplate of main engine.
13. Watertight bulkheads.
14. Deck plating.
15. Shell expansion.
16. Scheme of deck house framing.
17. General arrangement of fishing equipment.
18. General arrangement of masts and cargo handling equipment.
19. General arrangement of rudder.
20. General arrangement of mooring gear.
21. General arrangement of anchor gear.
22. General arrangement of life-saving equipment.
23. Signal lights scheme.
24. Lists of equipment.

NO

SECTION V

H u l l

1. Materials

The hull of the seiner is to be built of steel, grade CT 40, conforming to the requirements of the "Rules for Testing Shipbuilding and Engineering Material and Constructions", Register of Shipping of the U.S.S.R.

The steel deck is covered with pinewood planking, 50 mm thick.

2. Hull framing and frame spacing

The hull of the vessel is framed to the transverse system in accordance with the "Rules of Classification and Building of steel Sea-going Vessels", Register of Shipping of the U.S.S.R., 1956.

The frame spacing is 410 mm fore of the 14th frame, 530 mm in other parts.

STEEL SEINER CHC-I50

SPECIFICATION OF PIPING AND SYSTEMS

572/23-02-501

SECRET
NO FOREIGN DISSEM

C O N T E N T S

S E C R E T
NO FOREIGN DISSEM

SECTION I

ENGINE ROOM PIPING

1. Fuel piping of the main and auxiliary engine

This consists of:

a) two emergency side tanks 2.9 m^3 and 3.1 m^3 arranged in the engine room.

b) fuel service tank 0.25 m^3

c) hand pump

d) overflow fuel tank, 40 l.

e) piping with armature.

The fuel by gravity passes from the service tank to the fuel filters of the engines.

The service valves of the emergency and service fuel tanks are controlled from the engine room and from the upper deck.

The fuel can be delivered to the deck from the emergency tanks by means of the hand pump.

The fuel piping is made of steel seamless pipes.

Edge pipe joints with oil resistant washers are provided for.

The armature is of bronze and steel.

II. Oil piping

The oil piping consists of:

a) Emergency oil tank, 450 l.

b) Waste oil tank, 100 l.

c) hand pump

d) piping with armature.

The main engine, its reverse reduction gear and the auxiliary engine are filled with oil by hand.

There is a self-contained system of the auxiliary engine.

The piping is made of steel seamless pipes with edge pipe joints.

The armature is of steel and bronze.

III. Cooling water piping

The main engine is cooled by sea water.

The cooling water is partly to be used for stern tube lubrication.

The fire pump may be used as a reserve for main engine cooling. A safety valve is installed on the reserve cooling piping, adjusted to 1.5 kg/cm^2.

Cooling of the auxiliary engine is effected by a closed system with fresh water, which in its turn is cooled in the water cooler by sea water.

The piping is made of copper and steel seamless pipes.

Flange and edge pipe joints are provided for.

The armature is of bronze and steel.

IV. Compressed air piping

Compressed air or gas for the typhoon and the main engine starting is stored in 2 cylinders, 100 l each, and one cylinder of 40 l. The working pressure of the compressed air in the cylinders is 30 kg/cm^2.

Compressed air for the typhoon is stored in a 100 l. cylinder, at a working pressure of 30 kg/cm^2.

The cylinders are all installed in the engine room.

The piping is made of steel and copper seamless pipes.

Edge pipe joints are provided.

The armature is of bronze and steel.

V. Exhaust gas piping and smoke flue

The exhaust gas pipes of the main and auxiliary engine are laid through a special well to a false funnel.

The smoke flues of the water heating boiler in the galley range are also laid through the well to the false funnel.

The engine exhaust gas pipes are fitted with dampers and compensators.

A heater of washing water is installed in the galley, on the smoke flue of the galley range.

The exhaust gas piping and smoke flue are insulated in the engine room along their entire length up to the well.

The exhaust gas piping is made of steel seamless pipes.

The smoke flue of the water heating boiler is made of steel gas pipes and of thin steel welded pipes, while the smoke flue of the galley range is made only of thin steel welded pipes.

Flange pipe joints are provided for with fire-proof washers.

SECTION II

SHIP'S SYSTEMS

1. Water fire-fighting system and mechanisms

This is the chief means of fire-fighting on the vessel. Water from the fire main is delivered to the main engine cooling system and to the water-jet ejector of the bilge system, as well

as to the deck washing main and others.

The system is served by a fire el.pump 35-45 m^3/hr at a head of 40 - 20 m. and a portable hand pump.

The intake pipe of the el. fire pump is connected with the sea inlet main.

Water is delivered from the pressure-pipe branch of the pump to the pressure fire main, two fire branch water-pipes on the upper deck and one in the engine room.

The fire branch water pipes are fitted with Ø 50 mm hoses with branches. Two hoses 20 m long are fitted on the main deck at the fire branch water pipes and one hose 10 m long in the engine room.

Combined fire branch hoses are provided for.

The piping of the pressure main is made of steel galvanized gas pipes, that of the inlet main - of copper pipes.

The pipe joints are of the flange and coupling type.

The armature is of bronze and galvanized steel.

II. Bilge, fresh and sea water systems and mechanisms

A. Bilge system

This is served by:

a) a bilge pump fitted on the main engine, 4.4 m^3/hr.

b) bilge water - jet ejector, working from the fire pump, about 15 m^3/hr at 3.5 kg/cm^2 in the fire main.

Drainage in harbour is effected by a hand pump, 3.9 m^3/hr installed in the engine room.

The pipes in the fish hold are insulated with tarred hemp and pitch and are laid in one common casing with the water heating pipes and water pipes.

The piping is made of steel galvanized gas pipes.

Fitting and flange joints are provided for.

The armature is of bronze and galvanized steel.

B. Fresh water pipe line

This includes:

a) a drinking-water tank, 1.55 m^3 and a wash water tank 2.55 m^3 in the double bottom.

b) wash-water elevated tank, 200 l in the engine room

c) wash-water hand pump in the engine room

d) drinking-water hand pump in the galley

e) piping with armature.

The piping is insulated in the fish hold by tarred hemp and pitch and are laid in one common casing with the bilge main pipes and water heating pipes.

A branch pipe with a valve and hose is provided for on the pressure pipe of the elevated tank in the engine room, for filling the expansion tank and the cooling system of the auxiliary engine, etc.

There are non-return valves on the intake mains of the drinking-and washing-water in the vicinity of the fore orlop.

The piping is made of steel galvanized gas pipes with coupling joints.

The armature is of brass and bronze.

C. Sea water piping

This consists of:

a) Service tank, 25 l, in the W.C.

b) hand pump, 1.2 m^3/hr, in the W.C. and

c) piping with armature.

The sea water tank is filled by means of a hand pump.

The service tank is welded of steel with a branch for pipe and armature connection and a manhole for inspection and cleaning. It is cement-washed inside and oil-painted from without.

The piping is made of steel galvanized gas pipes with coupling joints. The armature is of bronze.

D. Sewage and scuppers

A W.C. bowl is installed in the W.C. with water supply from the sea-water service tank.

The sewer pipes of the galley are laid overboard separately from the sewer pipes of other accommodations.

Scuppers are provided for water discharge from the exposed decks and deck houses.

The piping is made of steel seamless pipes and of common steel galvanised gas pipes with flanges and malleable iron fittings.

The armature is of pig iron, steel and bronze.

III. Air, sounding and filling pipes

A. Air pipes are fitted in the emergency washing-water and fuel tanks, in the fuel service tank, fuel overflow tank and emergency oil tank as well as waste oil tank.

B. Sounding pipes are fitted in the emergency water and fuel tanks in the hold and fore peak.

The bush covers of the sounding pipes have inscriptions as to their destination.

C. illing pipes are provided for all emergency tanks, [illegible] upper deck.

All pipes are of steel gas pipes, galvanized when necessary, with coupling joints. The armature is of steel and bronze.

IV. Heating and ventilation

A. Water heating

The water heating is of low pressure with a natural circulation, and has parallel water heaters.

The system consists of:

a) A water-heating coal-burning boiler with a heating surface of 1.50 m^2, installed in the engine room.

b) Expansion tank, 30 l, installed in the wash-room

c) piping with heaters and armature.

The heaters are installed in the wheel house, radio room, cabins, orlops, drying-room and wash-room.

The engine room is heated from the water heating boiler, smoke flue and exhaust gas pipes.

Hot water is delivered to the shower in the wash-room.

The heaters in the cabins, radio room, wheel house and orlops are fitted with screens and covered with decorative, perforated metal casings.

With the exception of the fish hold, the hot water pipes in all accommodations are insulated with asbestos 3.5 mm thick and are given two coats of paint.

The cold and hot water pipes laid through the fish hold are insulated with two layers of asbestos line Ø 22 mm, tarpaulin band, tarred and covered with special steel casing. Cold water pipes are laid in one common casing with the bilge and water pipes.

The piping is made of steel gas pipes with fittings of malleable iron. The armature is of malleable iron and steel.

The heaters, ribbed, are made of steel and are covered with aluminium paint.

B. Ventilation

There is natural ventilation throughout the vessel.

The ventilation pipes, heads and mushroom ventilators are welded, of steel.

V. Communication system in the vessel

Speaking tubes are provided for between the bridge and the wheel house, as well as between the bridge-with a branch pipe from the wheel house - and the after peak with a branch-pipe to the engine room (a tube with two branch-pipes).

The speaking tubes have a speaking trumpet and whistles.

The piping is made of steel galvanized gas pipes with coupling joints.

The speaking trumpets are of plastic and the flexible joints of brass.

SECTION III

The following drawings and documents are delivered together with the vessel, one copy of each.

a) erecting scheme of the pipe mains and systems with armature.

b) specification of systems and piping.

c) operating instructions for piping and systems

[redacted]

d) description of piping and systems

e) albums of piping schemes, to the instructions and descriptions.

STEEL SEINER C4C-150

MACHINERY SPECIFICATION

572/23-02-101

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LIST OF CONTENTS

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Section I

1. Machinery Class

All the machinery of the ship as to materials used, workmanship and arrangement, is to conform to the Rules and Regulations of the Register of Shipping of the U.S.S.R. and to be built under the supervision of the latter.

II. Brief description and arrangement

The main engine and auxiliary machinery of the ship is to be placed in the engine room between the 23rd and 32nd frame.

The main engine comprises a marine Diesel engine, type S60V-224, with a reverse reduction gear developing 150 H.P., the number of revolutions of the crankshaft being 750 r.p.m. and that of the outlet flange of the reverse reduction gear being 375 r.p.m.

A Diesel generator АГ25-2, 25 kW, is provided for, consisting of a Diesel engine 4Ч10,5/13-2 of 40 H.P., driving a D.C. generator ПН-205, 230 V, 25 kW.

The entrance to the engine room is from the deck through a door in the house and an inclined ladder. Emergency exit is through a sky light with the aid of a vertical ladder.

III. Mechinery

A. Main engine

Four stroke, six cylinder, airless injection, vertical, non reversible single acting Diesel engine with a reverse reduction gear.

A bilge pump, cooling pump and fuel and oil filters are

NO

mounted on the engine.

Power take off for the generator Г-732 is provided for from the fore end of the engine crank shaft.

Two starting air cylinders of 100 litres each, a set of spare parts, special tool and devices, are delivered complete with the engine.

Main characteristics of the engine:

1. Type	- S6DV 224
2. Rated output:	
a) at engine shaft	- 150 H.P.
b) at outlet flange of the reverse reduction gear	- about 140 H.P.
3. Rated number of revolutions:	
a) at engine shaft	- 750 r.p.m.
b) at the outlet flange of the reverse reduction gear	- 375 r.p.m.
4. Number of cylinders	- 6
5. Cylinder bore	- 175 mm
6. Piston stroke	- 240 mm
7. Fuel	- Diesel fuel oil "Л or "З" as per USSR Standard, ГОСТ 305-42 or "ДС" as per ГОСТ 4749-49.
8. Specific fuel consumption	- 180 +10% g/h.p.hour
9. Oil	- Diesel oil "МЦ14" or "МЦ" as per ГОСТ 5304-54; the use of oil "МТ-16П" as per ГОСТ 6360-52

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	is permissible
10. Specific oil consumption	- about 5 g/h.p.hour
11. Mean effective pressure	- 5.16 kg/cm^2
12. Mean piston speed	- 6 m/sec.
13. Compression degree	- 14.85
14. Maximum compression pressure	- about 35 kg/cm^2
15. Maximum cycle pressure	- about 52 kg/cm^2
16. Direction of rotation of the crankshaft (looking from the side of the flywheel)	- right
17. Direction of rotation of the propeller shaft (looking from the stern)	- right
18. Momentary stable number of revolutions	- 200 r.p.m.
19. Starting	- by compressed air
20. Working pressure of starting air	- 30 kg/cm^2
21. Bilge and cooling pumps	- piston pumps, capacity 4.4 m^3/hour each.
22. Total weight of engine (dry, with the flywheel, reverse-reduction gear and foundation girders)	- 5.6 tons
23. Overall dimensions:	
a) Length (including the reverse-reduction gear)	- 3400 mm
b) Width	- 840 mm
c) Height (above the shaft)	- 1200 mm
d) Depth (below the shaft)	- 450 mm

NO

B. Main engine starting and control

Starting is effected with compressed air or exhaust gas at normal pressure 30 kg/cm^2 from one starting air cylinder of 100 litres and one cylinder of 40 litres.

A hand compressor PK-30 is provided as a reserve, for filling the 40 litre starting air cylinder.

Centralized control of the speed of the engine and of the reverse reduction gear is effected with the aid of a rope from the wheel house. A speed indicator, water and oil thermometers and an oil pressure gauge are provided for in the wheel house.

C. Diesel generator

Diesel generator, type ДГ 25-2, is installed as an auxiliary. It is mounted on 10 shock absorbers АКСС-400М made of steel and rubber.

Diesel generator

a) The main characteristics of the Diesel generator are to be in accordance with the technical conditions ТУ 479-2885-54.

1. Type	- ДГ 25-2
2. Rated power	- 25 kW
3. Rated number of revolutions	- 1500 r.p.m.
4. Current	- D.C.
5. Voltage	- 230 V
6. Total weight of dry Diesel generator	- not more than 1200 kg
7. Overall dimensions:	

NO

a) Length - 2055 mm

b) Width - 660 mm

c) Height - 1190 mm

The Diesel generator consists of a Diesel engine 4Ч 10,5/13,2 of 40 H.P. and of a generator ГН-205, 25 kW, 230 v. The Diesel engine and the generator are coupled by means of a flexible coupling and are installed on a common frame.

b) Diesel engine

1. Type	- 4Ч 10,5/13,2
2. Design	- Four stroke, vertical, trunk type, single acting, airless injection engine
3. Rated output	- 40 e.h.p.
4. Maximum output (up to 2 hours operation)	- 44 e.h.p.
5. Rated number of revolutions	- 1500 r.p.m.
6. Number of cylinders	- 4
7. Cylinder bore	- 105 mm
8. Piston stroke	- 130 mm
9. Compression degree	- 17-18
10. Fuel	- Diesel oil "Л " or "З" as per USSR Standard, ГОСТ 305-42 or "С " as per ГОСТ 4749-49
11. Specific fuel consumption	- Not more than 200 +5% g/e.h.p.hour at

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	calorific value 10,000 Cal/hour
12. Oil	- " ДП-II" or " ДП-II" as per USSR Standard, ГОСТ 5304-54 or "МТ-16 П" as per ГОСТ 6360-52
13. Specific oil consumption at rated output	- not more than 5 g/e. h.p.hr.
14. Cooling water consumption	- ab. 40 l. per one e.h.p./hr at outlet and inlet water temperature difference of 20°C.
15. Starting	- electrical starting device
16. Direction of rotation	- left (looking from the side of the fly-wheel)
17. Irregularity degree	- 1/125
18. Dry weight	- not more than 516 kg

c) Generator

1. Type	- ПН -205
2. Current	- D.C.
3. Voltage	- 230 V
4. Rated power	- 25 kW
5. Rated number of revolutions	- 1500 r.p.m.
6. Weight	- 460 kg

[redacted]

IV. Machinery and equipment of the engine room

The following machinery and equipment are installed in the engine room in addition to the main engine and the Diesel generator.

Description	Quantity	Main characteristics
1. Electrical fire pump [illegible]	1 set	Capacity 30 m^3/hr, head 41 m, motor [illegible], 10 kW
2. Bilge water-jet pump	1	Capacity 15 m^3/hr
3. Hand compressor PK-30	1	Capacity 2.4 m^3/hr, working pressure 30 k /cm^2
4. Hand bilge pump, type 3	1	Capacity 3.9 m^3/hr at head 30 m.
5. Fresh water hand pump, type 1	1	Capacity 1.2 m^3/hr, head 30 m
6. Fuel hand pump, type 1	1	
7. Oil hand pump, type 1	1	
8. Starting air cylinder	2	One of 100 l. and one of 40 l, pressure 30 kg/cm^2
9. Siphon cylinder	1	100 l, pressure 30 kg/cm^2
10. Diesel oil tank, spare (in the body of the vessel)	2	2.9 m^3 and 3.1 m^3
11. Diesel oil service tank (in the body of the vessel)	1	250 l.
12. Oil tank, spare	1	450 l.
13. Waste oil tank	1	100 l.
14. Fuel overflow tank	1	80 l.

15. Washing water elevated tank	1	200 l.
16. Main engine silencer	1	
17. Auxiliary engine silencer	1	
18. Sea cock	2	∅ 80
19. Engine room telegraph	1	Receiver ∅ 200 mm
20. Steel, welded, water heating boiler type CKC-1	1	Heating surface 1.5 m^2
21. Supply ventilator	2	∅ 300
22. Bench with vice and tool box	1 set	
23. Spare parts and tool cabinet	1	Welded, steel, with partition
24. Fire extinguisher	2	Dense foam installation
25. Felt-rug in casing	1	
26. Sand box	1	50 l.
27. Box for rags	1	30 l., steel, welded, with cover and two compartments for clean and dirty rags
28. Desk	1	Wooden, with drawer for log book
29. Arrangement for reverse gear and engine speed control from the wheel house	1 set	Rope wiring
30. Cabinet with storage batteries (in body of vessel)		

31. Distributing board, 220 V	1	See electrical equipment specification
32. Distributing board, 24 V	1	- " -
33. Generator Г-732	1	- " -
34. Generator Г-732 gear	1	Friction gear of main engine
35. Shaft gear of steering arrangement	1 set	
36. Flask for fishing gear oil	2	1-20 l., 1-10 l.
37. Regulator, РВ-5221 п	1	See specification of electrical equipment
38. Starting rheostat, РЗР-31 Б	1	
39. Transformer, 220/24 V	1	
40. Converter, 220/110 V	1	
41. Excitation regulator РЗВ-01 Б	1	
42. Starting rheostat РЗ П-3	1	
43. Distributing board, 110 V	1	
44. Charging rheostat, Р-4	1	
45. Generator regulator, 24 V	1	

All running parts of the machinery are protected by detachable casings of sheet steel and steel grids.

V. Shafting and screw propeller

The shafting consists of an intermediate and propeller shaft, stern tube and a thrust roller bearing.

Shaft interconnection and coupling to the main engine is effected by means of flange couplings.

A. Shafts

The propeller shaft is made of steel Ст .5, coated with brass Ол 10-2, forged. Dia. 90 mm, length 3500 mm.

Forged intermediate shaft made of steel Ст .5. Dia. 80 mm, length 2510 mm.

B. Stern tube

Steel seamless tube ∅ 160/15 mm as per USSR Standard, ГОСТ 301-50.

Fore and aft bearings are of steel with planks of wooden plastic. Lubrication is provided from the main engine cooling pipeline. Gland packing of oiled hemp.

C. Thrust bearing

Double-row radial roller bearing No.13516, spherical in pig-iron housing.

D. Screw propeller

Four-bladed of right-hand rotation. Made of brass

[redacted]

-65-d-1 as per USSR Standard, TOCT 1019-47. Dia. 1230 mm. Pitch 935 mm.

B. Bulkhead gland

Arranged in the bulkhead on the 32nd frame in the place of intermediate shaft laying. Gland packing - oiled hamp.

Section 2

1. Spare parts and tool

The vessel is furnished with spare parts and tool in accordance with the Rules and Regulations of the Register of Shipping of the U.S.S.R. as per liste No. 572/23-02-103 and 572/23-02-104.

In addition to the above, the following technical documents and drawings, relating to ship's machinery, are also furnished:

1. Engine room general arrangement drawing	- 1 copy
2. Shafting and stern tube drawing	- 1 "
3. Screw propeller and propeller cap nut drawings	- 1 copy each
4. Machinery specifications	- 1 copy
5. List of spare parts and tools	- 1 copy
6. List of machinery equipment	- 1 copy
7. Main engine S6DV-224 operation instructions	- 1 copy
8. Service list of main engine S6DV-224	- 1 copy
9. Set of drawings of main engine S6DV-224	- 1 set
10. Service list of Diesel generator ГД25-2	- 1 copy
11. Diesel engine 4Ч10,5/13, maintenance instructions	- 1 copy

12. Acceptance certificate of Diesel generator
    Г 25-2, with protocol copies - 1 copy
13. Final drawings of Diesel generator
    Г 25-2 - 1 copy
14. Documents for generator П Р-205 - 1 set
15. Certificate for materials and service
    list of starting air cylinders of 100 l - 1 copy
16. Certificate for materials and service list
    of 40 l, starting air cylinder - 1 copy
17. Drawing of elevated tank - 1 copy
18. Certificate for materials and service
    list of elevated tank - 1 copy
19. Water heating boiler drawing - 1 copy
20. Service list of water heating boiler - 1 copy
21. Operation instructions and service lists
    for el.fire pump, hand pumps, hand
    compressor, for water heating boiler,
    el.seine winch, net lifting machinery and
    windlass - 1 copy each

NOTE: Technical documents pos. 7 to 21 are delivered by the plants manufacturing the machinery and equipment.

II. Testing and acceptance

Testing and acceptance of the main engine and auxiliary machinery is carried out in accordance with the programme approved by the Register of Shipping of the U.S.S.R. and by the Buyer.

III. General note

1. For specification of deck and fishing machinery see

hull specification.

2. A hand pump PIII -M is to be installed in addition to the abovementioned fire fighting equipment.

3. All hand pumps are to be fastened on special brackets.

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STEEL SEINER CYC - 150

SPECIFICATION OF ELECTRICAL EQUIPMENT

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Section I

Class and general requirements

All electrical equipment installed on the seiner CHC is to comply with the Rules and Regulations of the Register of Shipping of the U.S.S.R. valid for electrical equipment of sea-going vessels.

Section II

Electric power sources

1. Ship's mains

Two separate mains are to be provided for on the vessel.

a) Lighting circuit main, 24 V, D.C.

b) Power consumers' and outdoor lighting main, 220 V, D.C.

The number and output of the generators are to be in accordance with the loads indicated in the table of power station 220 V operation, and should provide for supplying the power consumers at all conditions of operation of the ship.

2. Power sources

a) Generator 25 kW - one set

One D.C. compound-dynamo, type ПН-205 of dust-proof design, 25 kW, 230 V, 1500 r.p.m. driven by a Diesel engine 4Ч, 10,5/13-2, 40 H.P. at 1500 r.p.m.

b) Converter 220/110 V - one set

The converter consists of a D.C. compound-dynamo, type

[redacted]

II H-85,6.8 kW, 115 V, 1460 r.p.m. of dust-proof marine design driven by an electrical motor, type II H-85, 9 kW, 220 V, 1500 r.p.m.

The 115 V generator is designed for supplying underwater lighting lamps which are used when fishing with the use of electric light, and for charging of storage batteries.

Should the electric light not be used for fishing, the converter can be omitted and, in this case, the charging of the storage batteries should be carried out from the ship's main of 220 V through two series resistances.

c) Generator 1.5 kW, 24 V - one set

The D.C. generator, type ГСК-1500, 1500 W, 28 V, 3800 - 5900 r.p.m., mounted on the auxiliary Diesel-generator, is designed for charging storage batteries of the starting device of the Diesel-generator and can be connected to the bus bar of the 24 V. distributing board.

d) D.C. generator 732, 1.2 kW, 24 V - one set

The generator, driven by the main engine, is designed for charging storage batteries and feeding the radio station.

e) Starting storage batteries - two sets

Two storage batteries, type 6 CTK-180 m, of 180 A/hr, 12 V, connected in series, are designed for auxiliary engine starting.

f) Ship-lighting storage batteries - 4 sets

Acid storage batteries, type 6 CTK-180 m, 180 A/hr, 12 V, are connected in two parallel groups, each consisting of two

series-connected batteries.

The total capacity of the batteries is 360 A/hr. They are designed for feeding the lighting circuit and alarm signalling or are connected to the circuit together with the generator Г-732 to regulate current voltage for feeding of lighting circuit.

Section III

Electric power distribution and wiring

1. Two conductor wiring is provided for el.power distribution.

The following distributing boards are installed in the engine room:

a) Distributing board, 220 V

b) Distributing board, 24 V

c) Distributing board of the generator 6.5 kW, 115 V

A/ The distributing board, 220 V feeds:

a) Power consumers

b) Fishing lighting circuit

c) D.C. converter 220/110 V

B/ The distributing board, 24 V feeds:

a) Normal and local lighting circuit

b) Navigational searchlight

c) Radio station

d) Circuit charging the storage batteries

e) Alarm signalling circuit

f) El.siren.

Electrical current from the shore is supplied to the bus bars of the distributing board, 24 V, through a plug and

a transformer 220/25 V, type OCB-0,5/0,5, 0,5 kVA, installed in the engine room.

C/ The distributing board of the generator, 115 V

a) feeds the underwater lighting circuit and

b) provides for charging the storage batteries of the lighting circuit, 24 V and for the Diesel generator starting device.

2. Commutation and protecting system

a) 220 V El. Circuit

Connection and disconnection of the generator and of the power consumers is performed on the 220 V. distributing board.

The generator is connected and disconnected automatically by means of the circuit breaker, type 3130, 200 A, while all the power consumers are connected and disconnected with the aid of the circuit breaker, type 3113/1, 100 A. The disconnectors of the automatical circuit breakers are chosen in accordance with the current of the circuit to be protected.

The same circuit breakers are designed for overload and short circuit prevention in the circuits of the generator and the power consumers.

b) 24 V El. Circuit

Power sources and consumers are connected and disconnected on the 24 V distributing board by means of packet switches.

The commutation scheme of the distributing board provides for the work of either generator ГСК-1500 or generator Г 732 both for charging of the storage batteries and for feeding of the lighting circuit.

The Г 732 generator is designed both for radio station feeding and for operation together with the storage batteries for feeding the lighting circuit.

The scheme of the 24 V distributing board commutation provides for the possibility of charging storage batteries also from the circuit main of 110 V, through a charging rheostat.

The ГСК-1500 generator is protected by an arrester, type Б 3, and automatical devices built in the relay regulator, type РК-1500 В.

Protectors type Б3 are installed on the distributing board to protect the power consumers circuit against short circuits.

c) 110 V El. Circuit

Connection and disconnection of the 115 V generator and of the underwater lighting circuit, as well as charging of the storage batteries through the 24 V distributing board is effected on the distributing board of the 220/110 V converter.

Connection and disconnection of the generator is performed by means of a packet switch, 60A, type ПК-2-60/Н2.

Protectors, type ПР, are installed on the distributing board to protect the generator and feeders against short circuits.

3. Power sources and consumers operation control

a) Circuit main 220 V

The voltage of the 220 V generator is regulated by an excitation regulator, type РВ 5221 М, installed in the engine room.

Regulation is performed by hand.

An ammeter with a scale of 0-150 A and a voltmeter with a scale of 0-250 V are installed on the distributing board.

To control insulation resistance, there is installed a voltmeter with a scale of 0-250 V with a double pole three-way packet switch.

All the above-mentioned control instruments are of the M-210 type.

b) Circuit main 24 V

The voltage of the Г СК 1500 generator is stabilized automatically by means of a relay-regulator, type РК-1500 В.

The voltage of the Г 732 generator is regulated by means of a voltage relay installed in the relay-regulator РТТ-32.

An ammeter, type М-415, with a 75-0-75 A scale with three shunts, as well as a voltmeter with a 0-50 V scale with a switch type ПК2-10/Н3 for three positions, are installed on the distributing board to provide for control of the generator operation and charging of the storage batteries.

c) Circuit main 110 V

The voltage of the 115 V generator is regulated by an excitation regulator, type РВ 5002.

An ammeter with a scale of 0-50 A and a voltmeter with a scale of 0-150 V type М-415, are installed on the distributing board of the converter.

DESIGN OF THE DISTRIBUTING ARRANGEMENTS

Distributing board 220 V

This is a dust-proof, welded steel box in which the

control instruments and a lighting lamp are installed. The handles of the commutation apparatus are on the face panel of the box.

Distributing board 24 V

This is likewise a dust-proof, welded steel box upon the face panel of which there are the scales of the control instruments and the handles of the commutation apparatus.

The lower part of the box accomodates the protecting devices and shunts.

Distributing board of the 115 V generator

This is a dust proof, welded steel box, upon the face panel of which there are the scales of the control instruments and the handle of the packet switch.

The lower part of the box accomodates the protecting devices and a shunt.

Wiring

KHP II cable is used for the electrical circuit mains.

The dimensions of the cables and wires are chosen in accordance with the current density and are to be tested as to voltage drop which should not exceed the standards of the Register of Shipping of the U.S.S.R.

Cable laying and passage through the bulkheads and the decks should be carried out in accordance with the Rules and Regulations of the Register of Shipping of the U.S.S.R.

Section IV

1. power consumers

1. Electric lighting and li hting fittings

a) Outdoor and normal lighting of all accommodations on the vessel is effected by underdeck boat li hting fittings, type 56, from the circuit main 24 V.

b) Outdoor lighting when fishing is provided for by dust- and water-proof lighting fittings, type 1330 A, from the circuit main 220 V.

Three lighting fittings for outdoor lighting are mounted on the mast and two on the front wall of the house.

c) Local lighting is provided for in the radio room, wheel house and in the cabins and orlops.

Desk lamps, type 13003, are placed fixed on the desks installed in all these accommodations, with the exception of the wheel house.

A special lighting fitting, type 65, is installed in the wheel-house.

d) Portable lamps are fed from the circuit main 24 V. Plugs for the portable lamps are provided for in the engine room in the after peak and on the cargo hatch coaming for holds lighting.

Lighting fittings, type CPK-1401, are used for portable lighting.

Searchlight

For lighting the water surface when fishing, a navigating searchlight, lamp-type K-35-2, 220 W, 24 V, is installed on

the house top.

Two motor-car head lamps [illegible] -10, 25 [illegible], 26 V are installed on the house top fore and aft. for lighting up the working space on the deck.

2. Signal and regulation lights

1. Top lantern	- 1
2. Portside light	- 1
3. Starboard light	- 1
4. Stern light	- 1
5. Towing light	- 1
6. Truck light	- 1
7. Anchor light	- 1
8. Emergency light	- 2
9. Fishing lamps	- 3

The lights listed 1-5 are fed from the signal lights station KCK5-24, installed in the wheel house.

The other lights are fed from the lighting circuit main with a common central disconnection from the wheel house.

The following lighting fittings are provided for the lights:

For top lantern and towing light	- type 159 m
For stern light	- type 160 m
For starboard light	- type 157 m
For portside light	- type 158 m
For truck light	- type 251
For fishing lamps and anchor light	- type 259
For upper emergency light	- type 257

For lower emergency light - type 201

El. motors

a) Seine winch - 1 piece

The seine winch is driven by a marine D.C. el.motor with compound excitation, water-proof, type [illegible], 11 kW/hr, 220 V at 1320 r.p.m. with a disc brake, type TMП .

Starting and control of the el.motor is effected by a dog controller, type ПДС 5125, water-proof design.

The starting device regulating rheostat is of water-proof design, type C-4331-3.

b) Windless - 1

The windless is driven by a marine D.C. el.motor with a compound excitation type КОДМ-2У , having 5 kW half-hour capacity, 220 V, at 1430 r.p.m. with an adjusted disc brake, type ТМП.

Starting and control of the el.motor is effected by a dog controller, type ПДТ -5127, of water-proof design.

The starting device regulating rheostat is of water-proof design, type C-3568-6.

c) Fire pump

The fire pump is driven by a marine D.C. el. motor, type ПП -60, 10 kW, 220 V at 2400 r.p.m. of water-proof design.

Electric motor starting and speed regulating is effected by a starting rheostat, type РЗВ-31 [illegible] of water-proof design, with maximum and minimum protection.

d) Fish pump

The fish pump is driven by a water-proof marine D.C. el.motor type МПМ-32 ,8 kW, 220 V at 925 r.p.m.

Starting and control of the el.motor is effected by a dog controller, type ПБТ -5125, and rheostat type СКЭ 31-2 and СЛ-4 .

e) Seine lifting machine

The seine lifting machine is driven by a water-proof el.motor, type ПН-68 , with a continuous capacity of 6.5 kW, 220 V at 1550 r.p.m.

Starting and control of the el.motor is effected by a dog controller, type ПБТ -5127 and a rheostat type СКЭ 31-3.

Alarm signalling

Alarm signalling is provided for by bells, type КЛГ-24, bell signals ЗВОЗ-24 and signal lamps.

The bells are installed in the engine room and on the deck. Bell signals are provided for in the orlops, while the signal lamps with red shades are in the engine room and in the radio room.

Alarm signals are fed from the circuit main 24 V.

The alarm signalling is switched on with the aid of a double-pole knife switch, type ЗНР-2, installed in the engine room.

Signalling

An electric siren, type ЭСС-I, 24 V, is installed to provide for sound signalling.

Spare parts and tools

Spare parts and tools are delivered in compliance with the Rules and Regulations of the Register of Shipping of the U.S.S.R, and the lists of spare parts drawn up by the Works manufacturing electrical equipment.

Main Engine Speed Indicator

For remote reading of the main engine speed, a speed indicator is installed in the wheel house. This speed indicator operates from a transducer mounted at the main engine shaft.

STEEL SEINER CYC-150

SPECIFICATION OF WIRELESS

EQUIPMENT

572/23-02-301

The seiner is equipped with a wireless short-wave receiving-transmitting set "ULOV", which provides for two-way wireless communication, ship-to-ship at sea and ship-to-shore, as well as for transmitting of alarm and distress signals.

The "Ulov" set is fed from two storage batteries, the main source being the ship's main 24 V. D.C.

The radio station apparatusus are installed in the radio room. The converters are in a special room, while the storage batteries are placed in a steel box on the deck house top.

The following aerials are provided for:

1. Transmitting three-beam gamma aerial between the fore and aft mast.

2. Receiving aerial, 4 m high, fitted on a special wall bracket on the radio room bulkhead.

An echo-sounder "HDJ 5p" fed from the ship's main, 220 V. D.C. provides for fish detection and safety of navigation in shallow waters. The set consists of:

1. A recording device
2. A depth indicator
3. An amplifier
4. A signal-sending relay
5. Rheostat
6. Filter with switch
7. Converter 0.7 KW
8. Vibrator - emitter
9. Vibrator - receiver.

The recorder, depth indicator, amplifier, rheostat, filter and relay of the echo-sounder are placed in the wheel house.

The converter is placed under the wheel house in a special compartment.

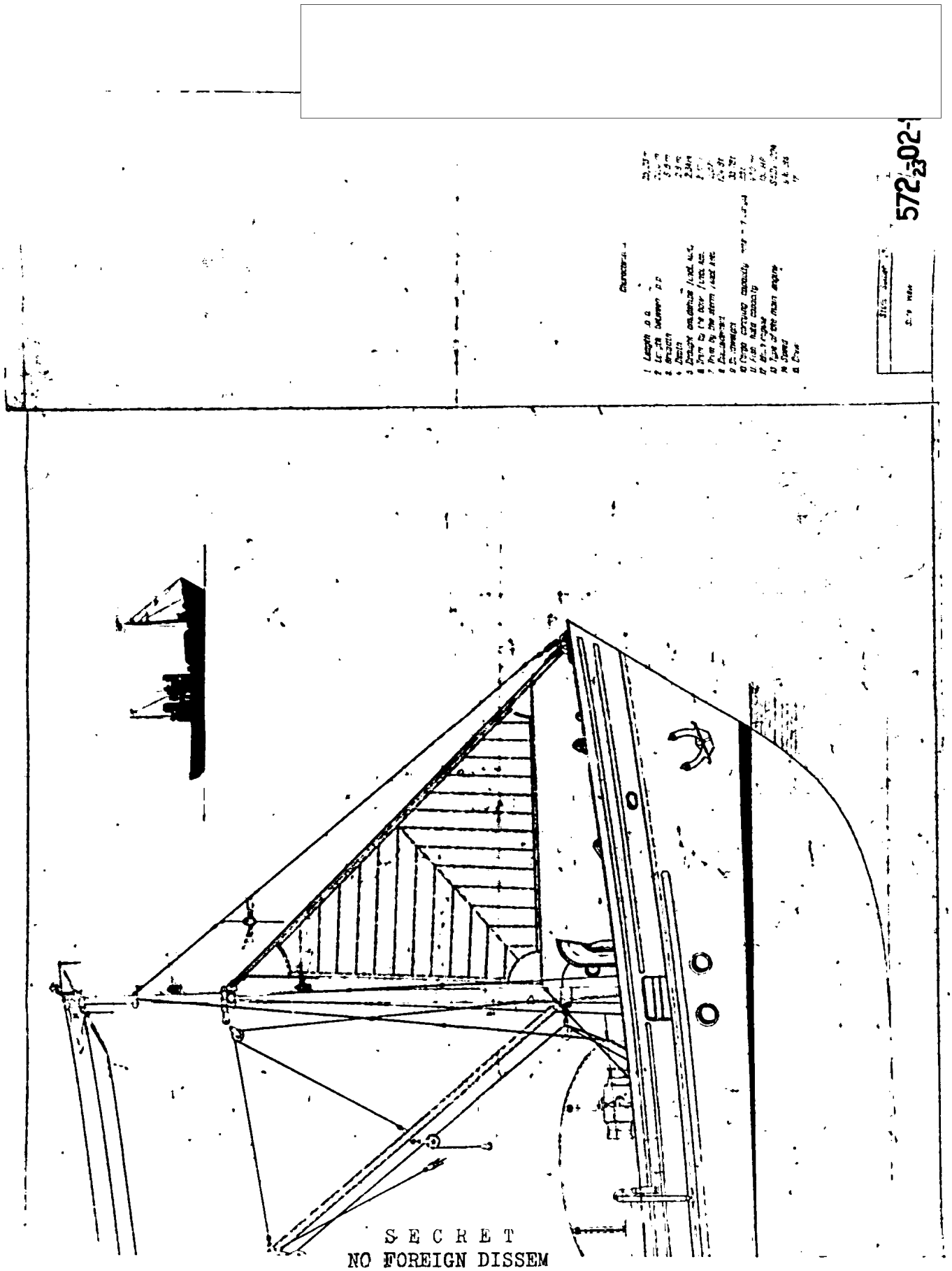
Vibrators are installed in the ship's bottom, in special wells near the fish hold.

High voltage cables are laid in steel gas pipes 3/4" on the fore wall of the engine room, to connect the vibrator-emitter with the signal-sending relay and the vibrator-receiver with the amplifier.

The wireless equipment of the seiner is to comply with the technical conditions for installation and the Requirements of the Register of Shipping of the U.S.S.R., as to the apparatus components, materials used, erection and arrangement of the equipment.

TECHNICAL DOCUMENTATION

1. Specification of wireless equipment
2. Connection scheme of the "Ulov" set
3. Wireless equipment arrangement in the radio room
4. Aerial arrangement
5. Echo-sounder apparatus arrangement in the wheel house
6. Converter arrangement
7. Erection scheme of the echo-sounder
8. Cable-laying of the echo-sounder.



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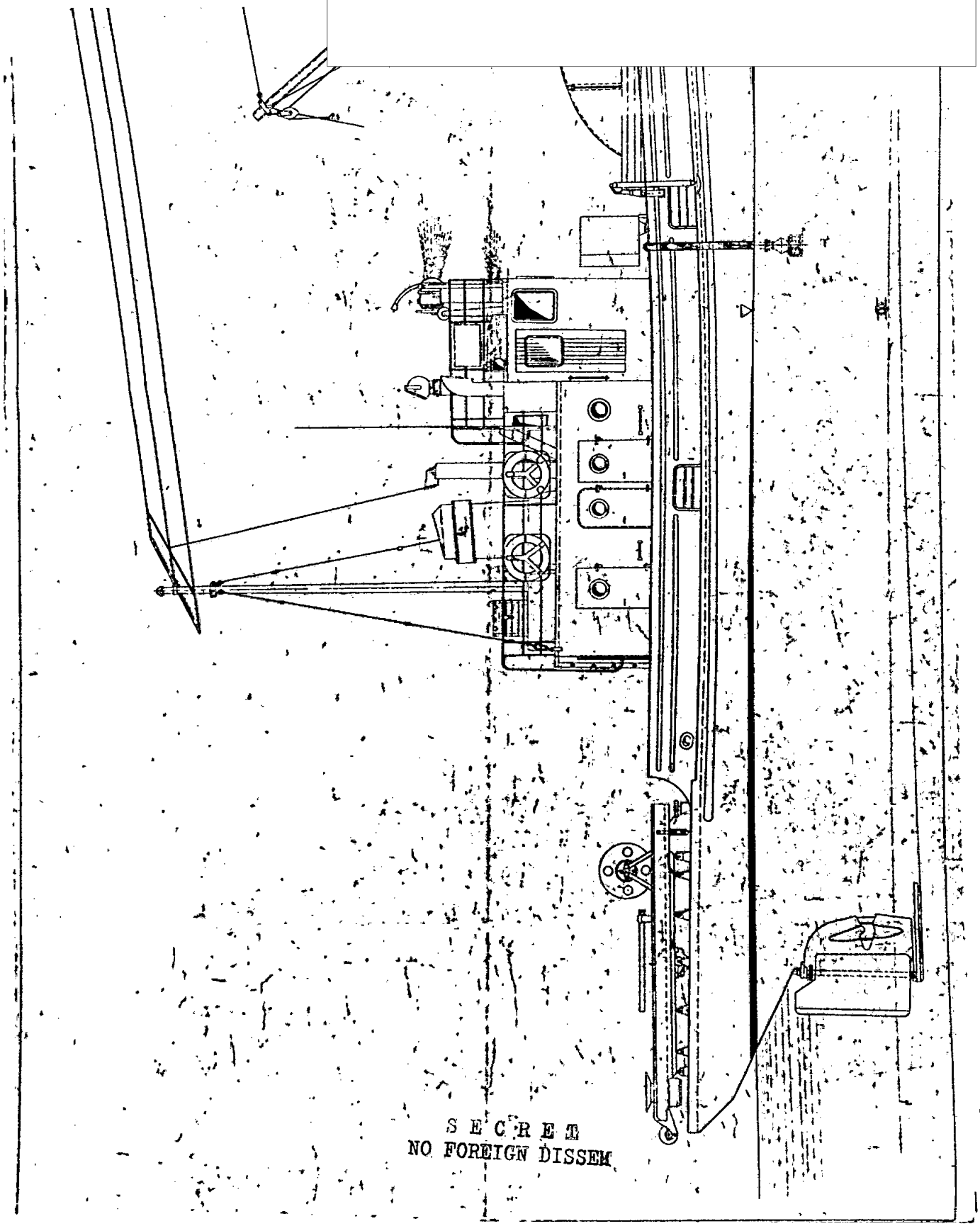

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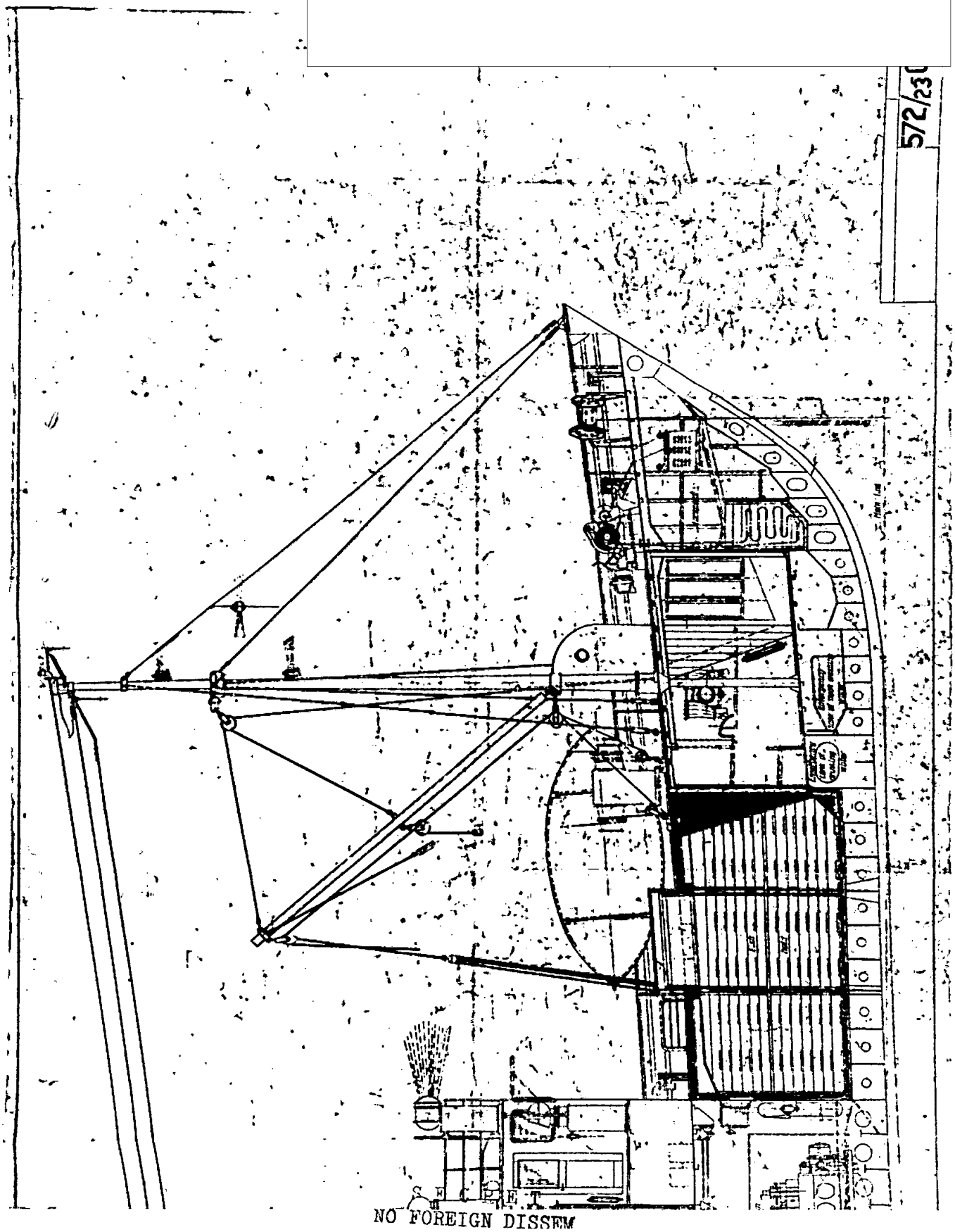

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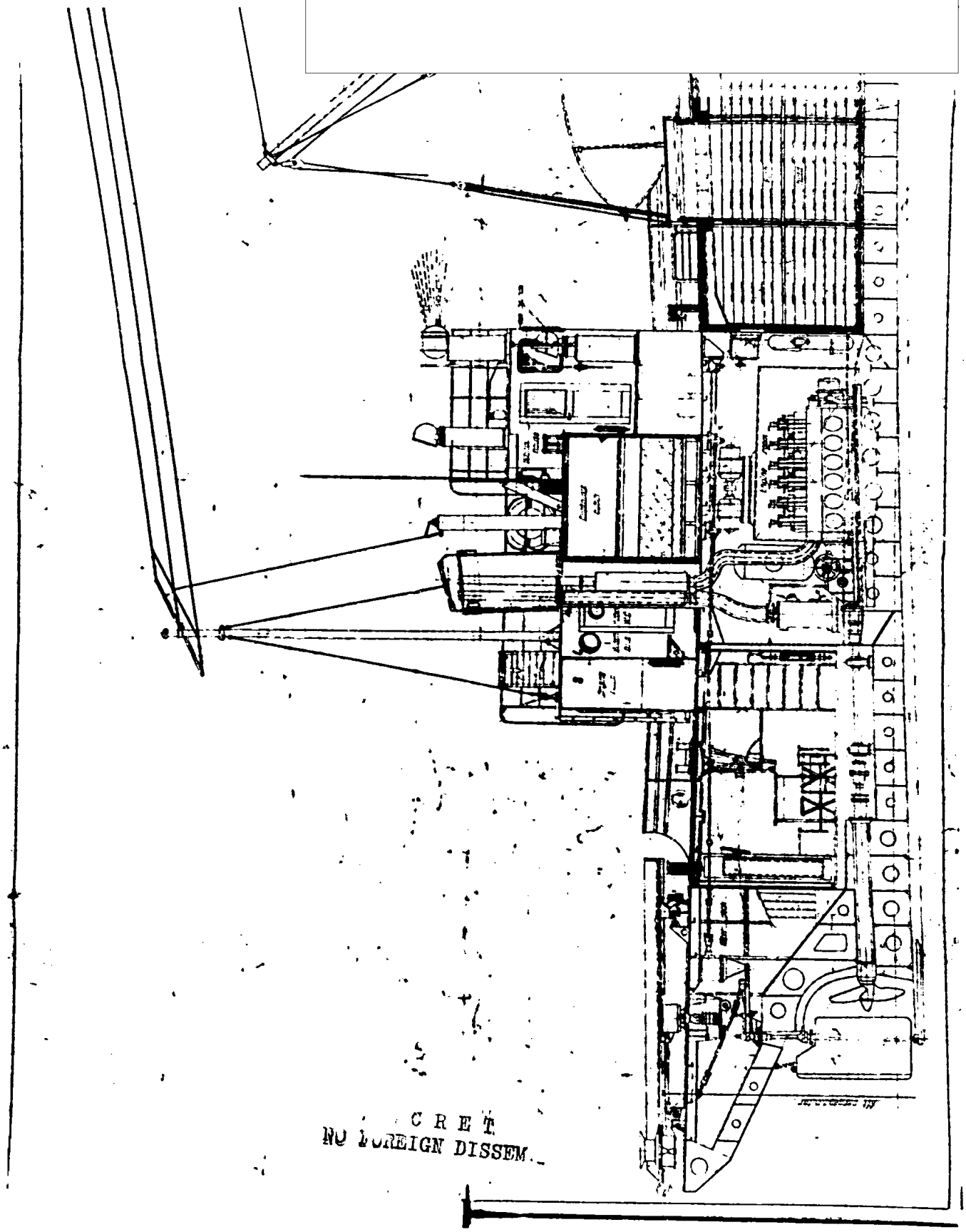

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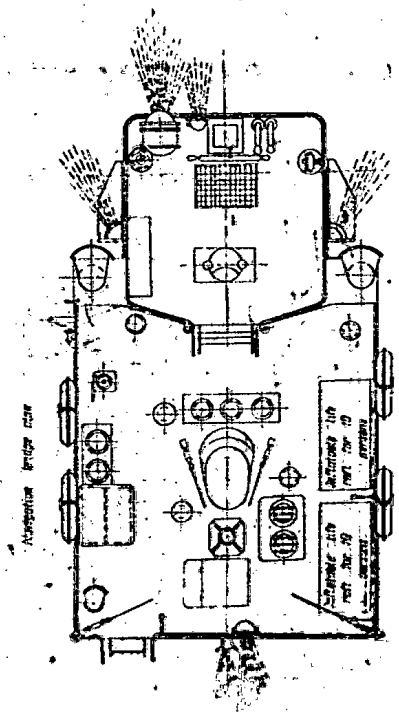

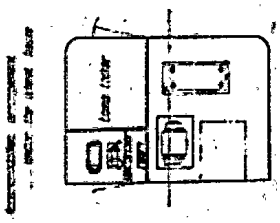

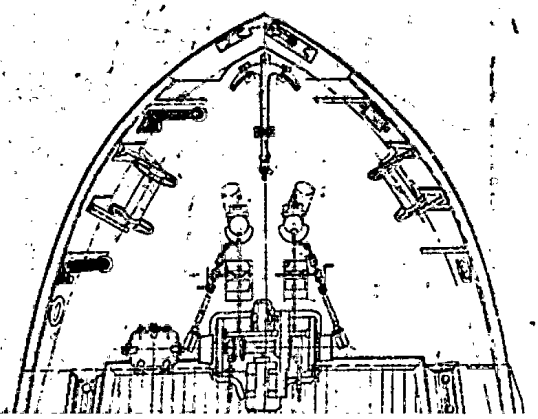

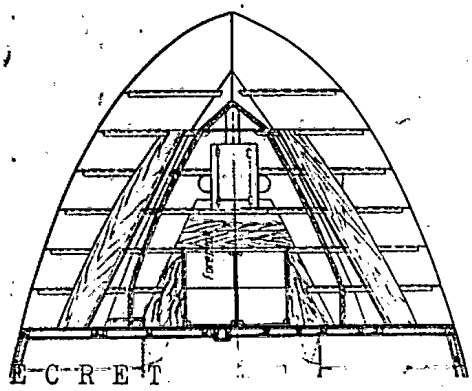

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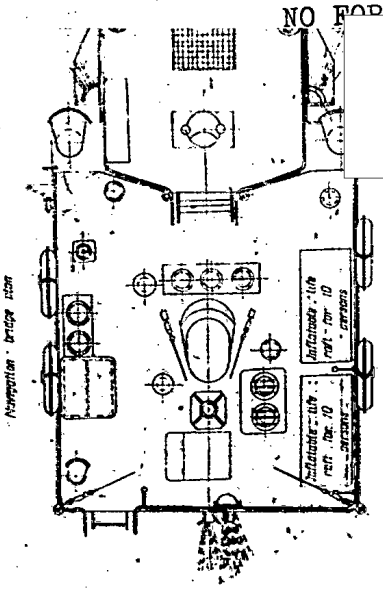

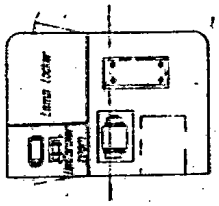

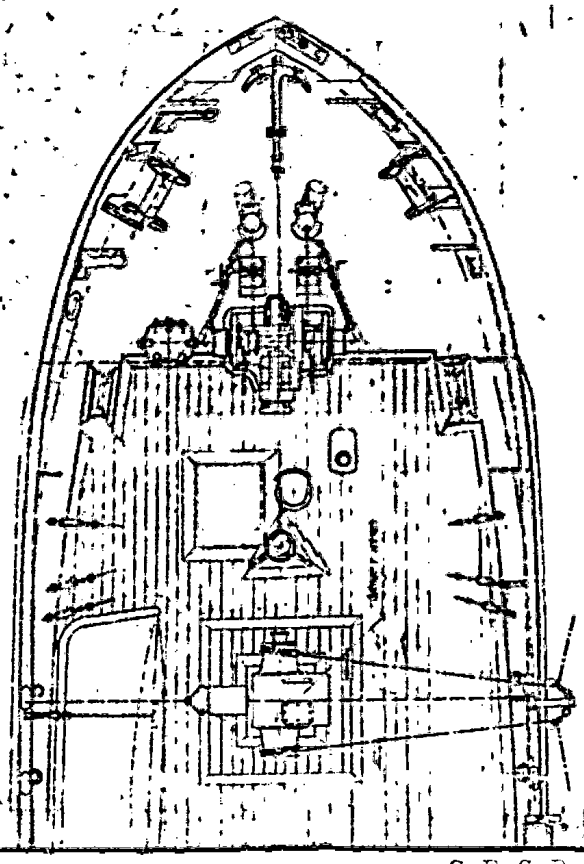

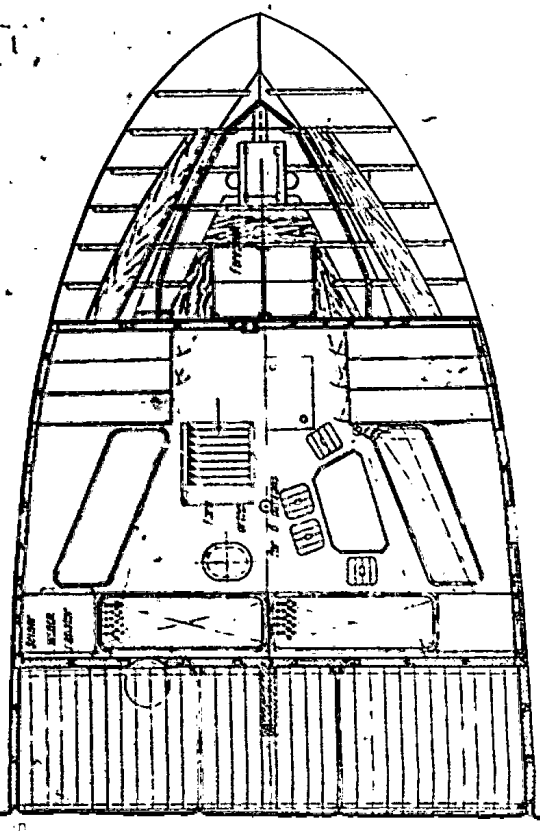

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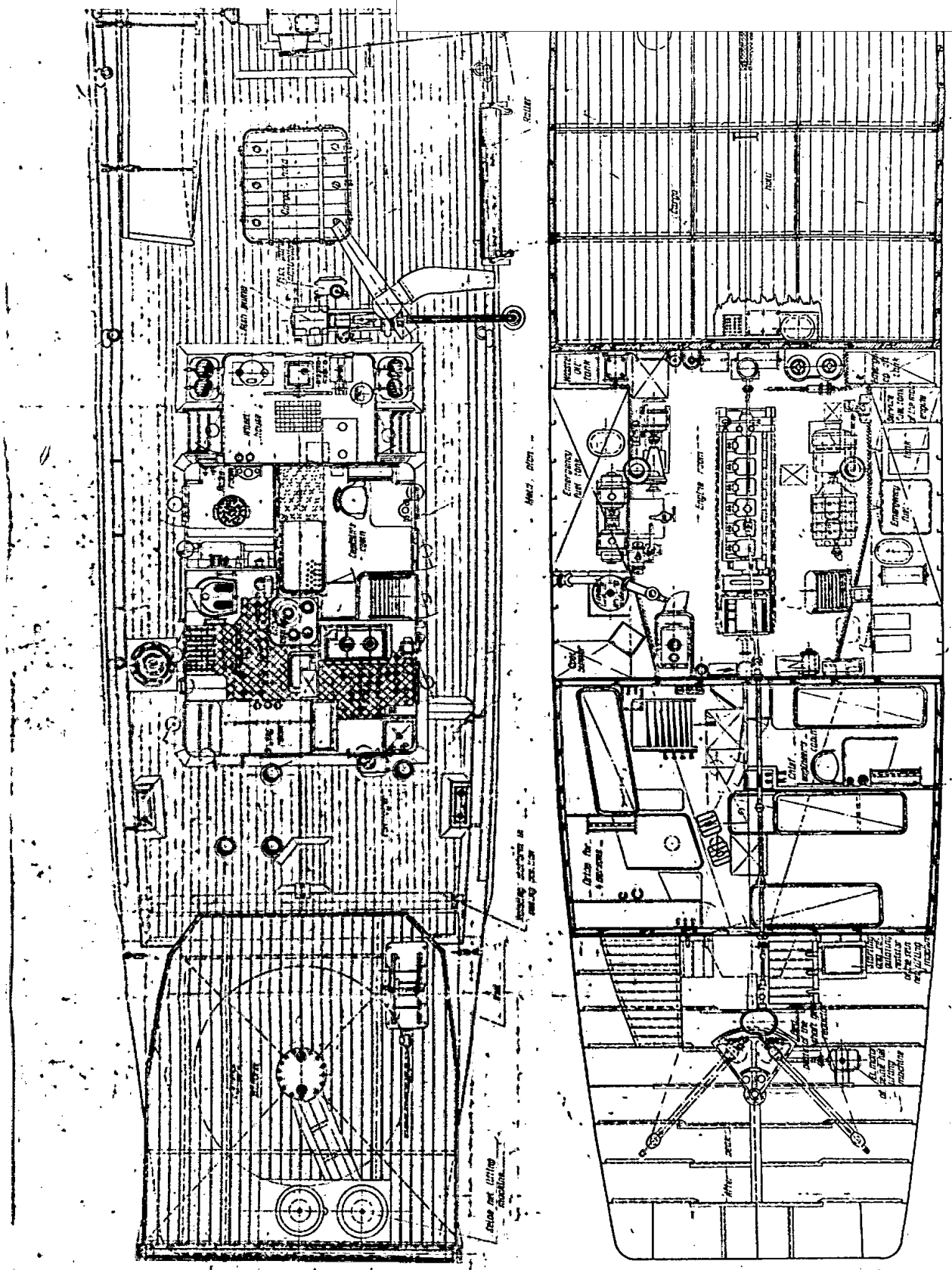

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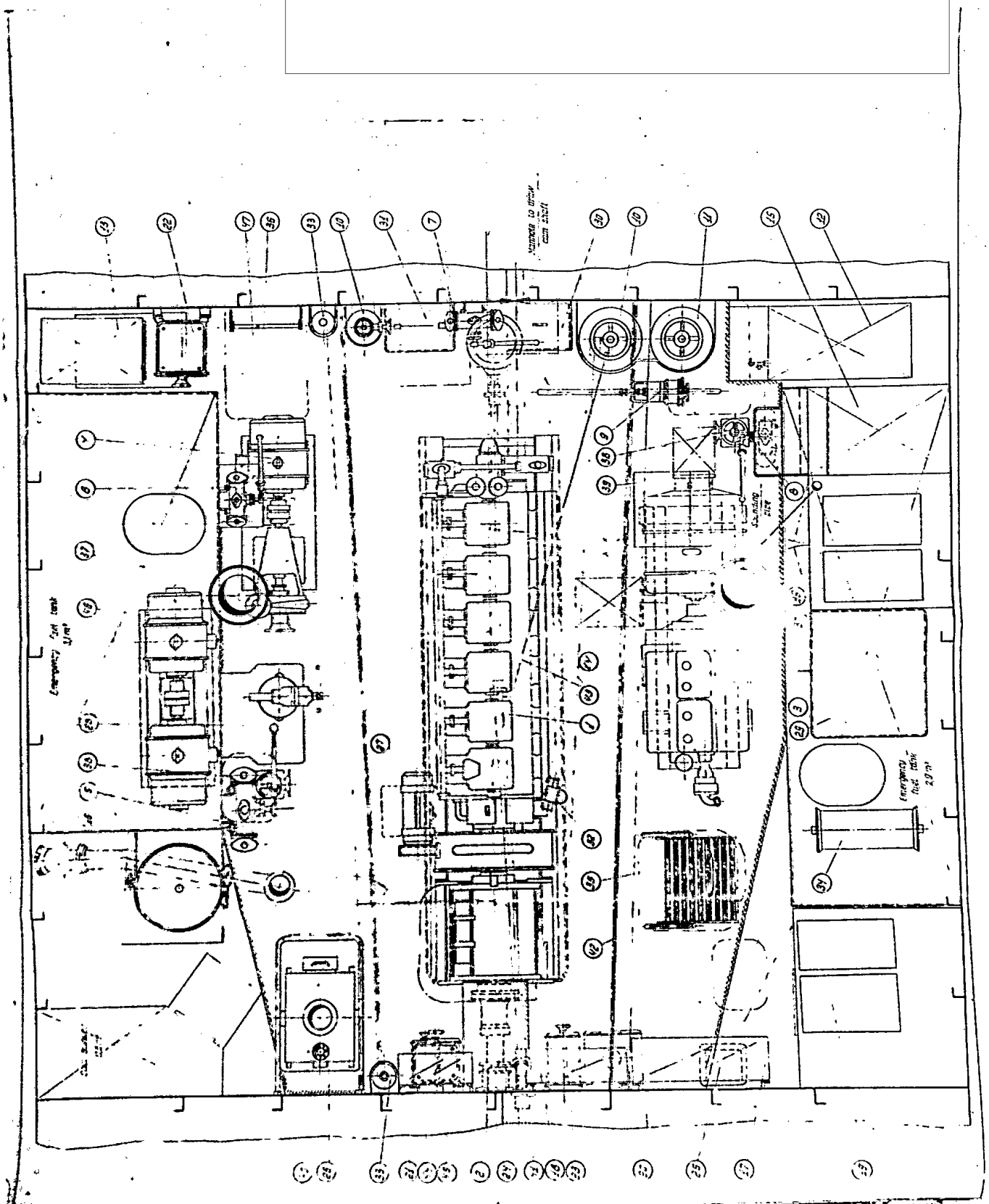

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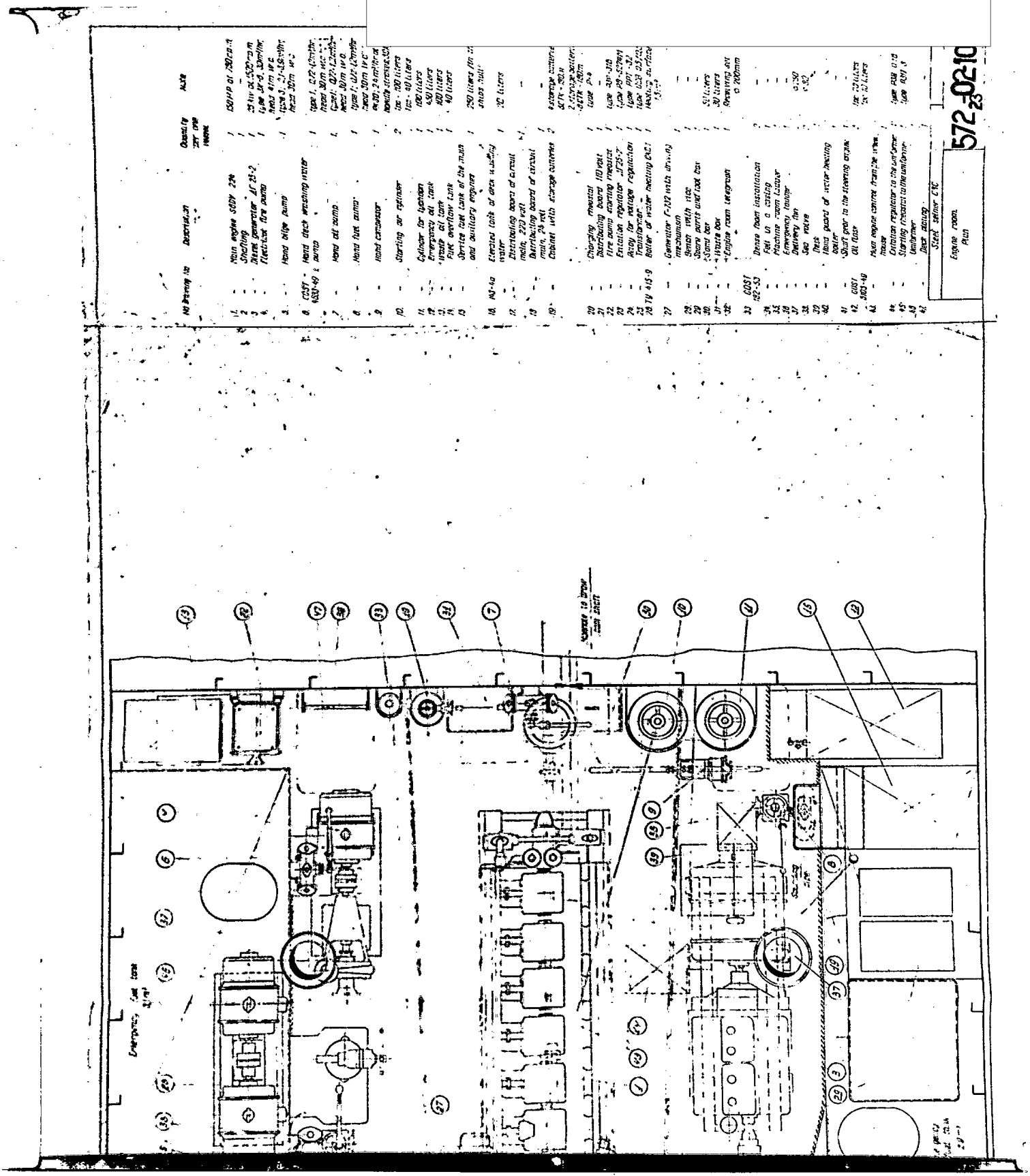

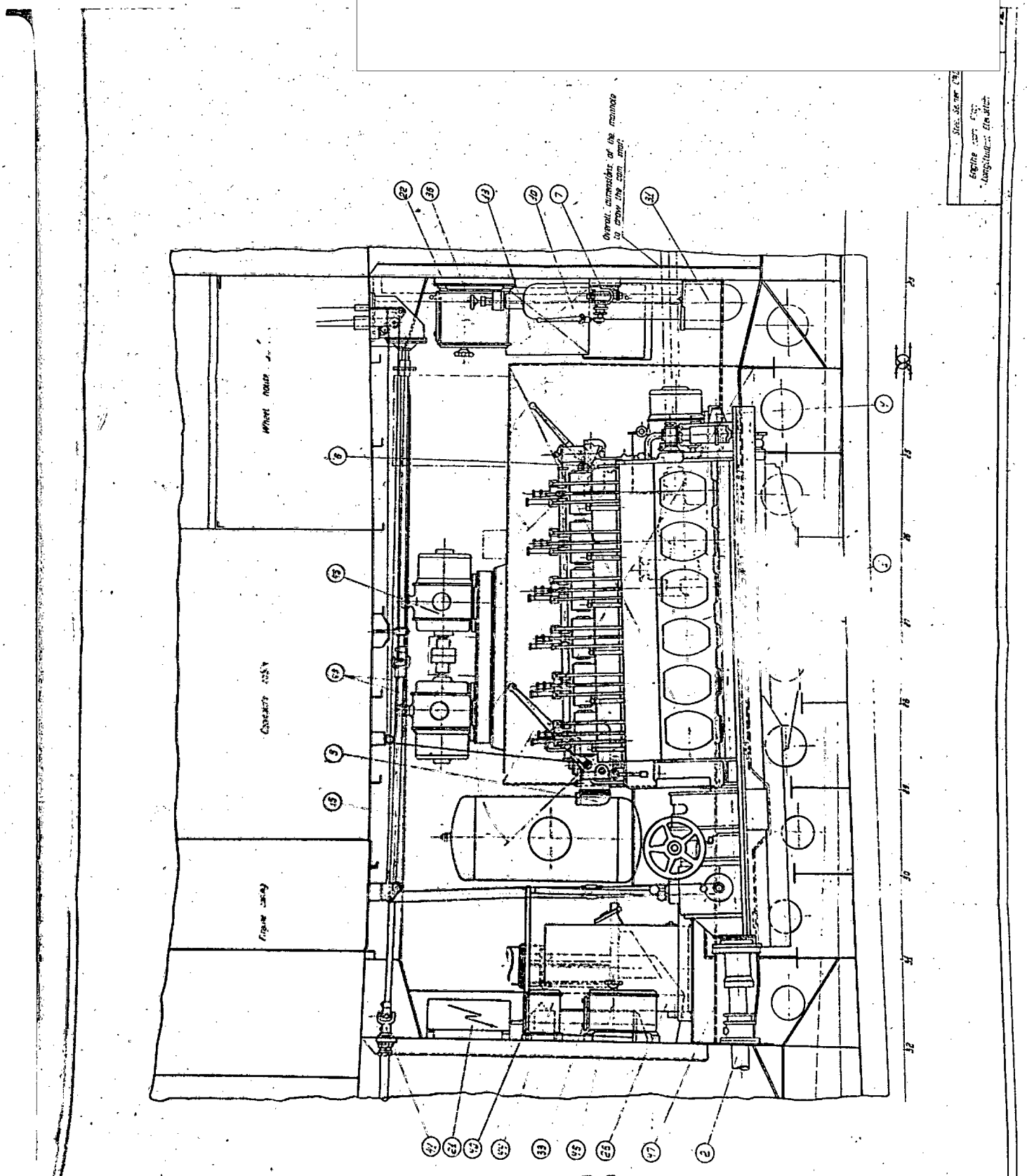

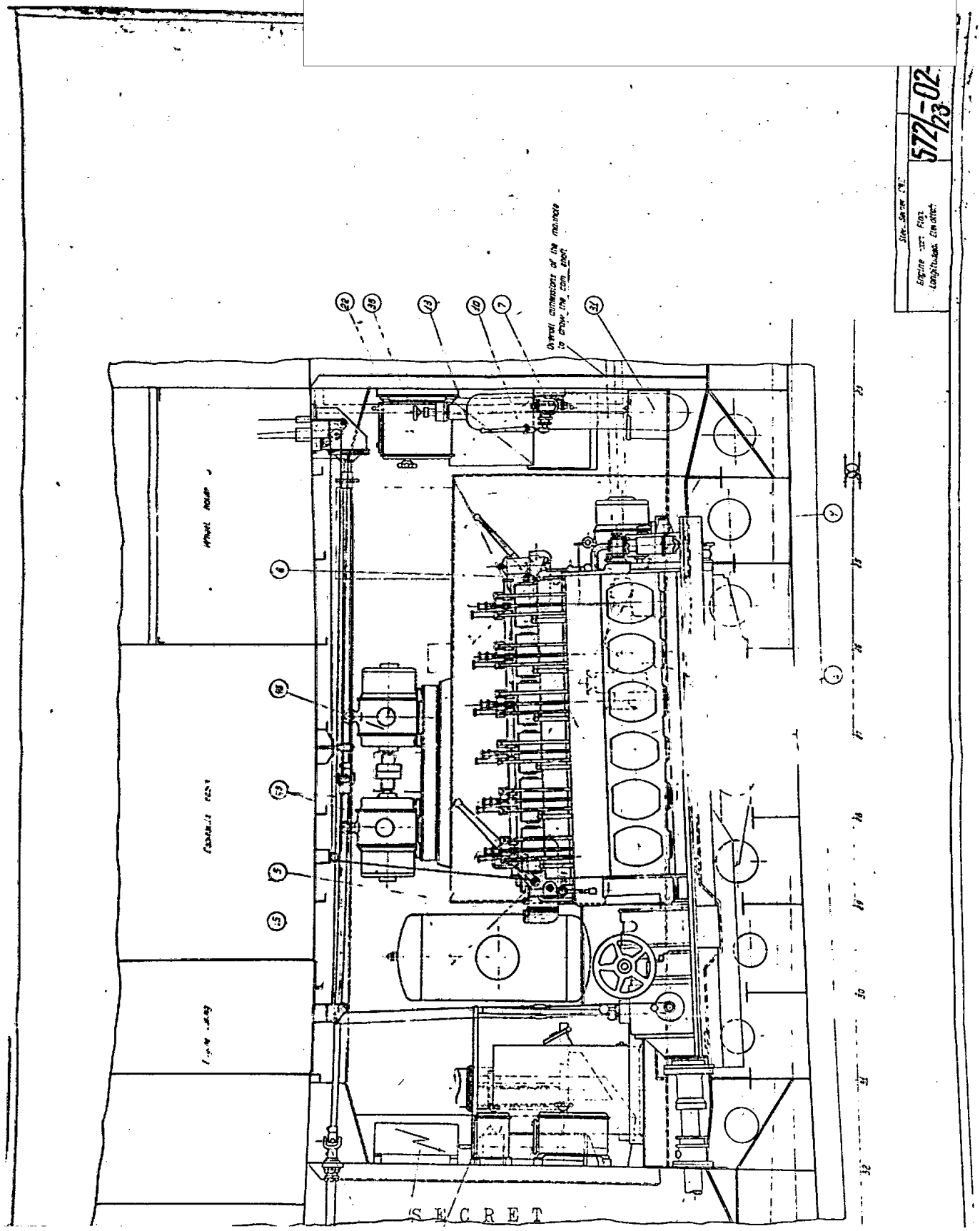

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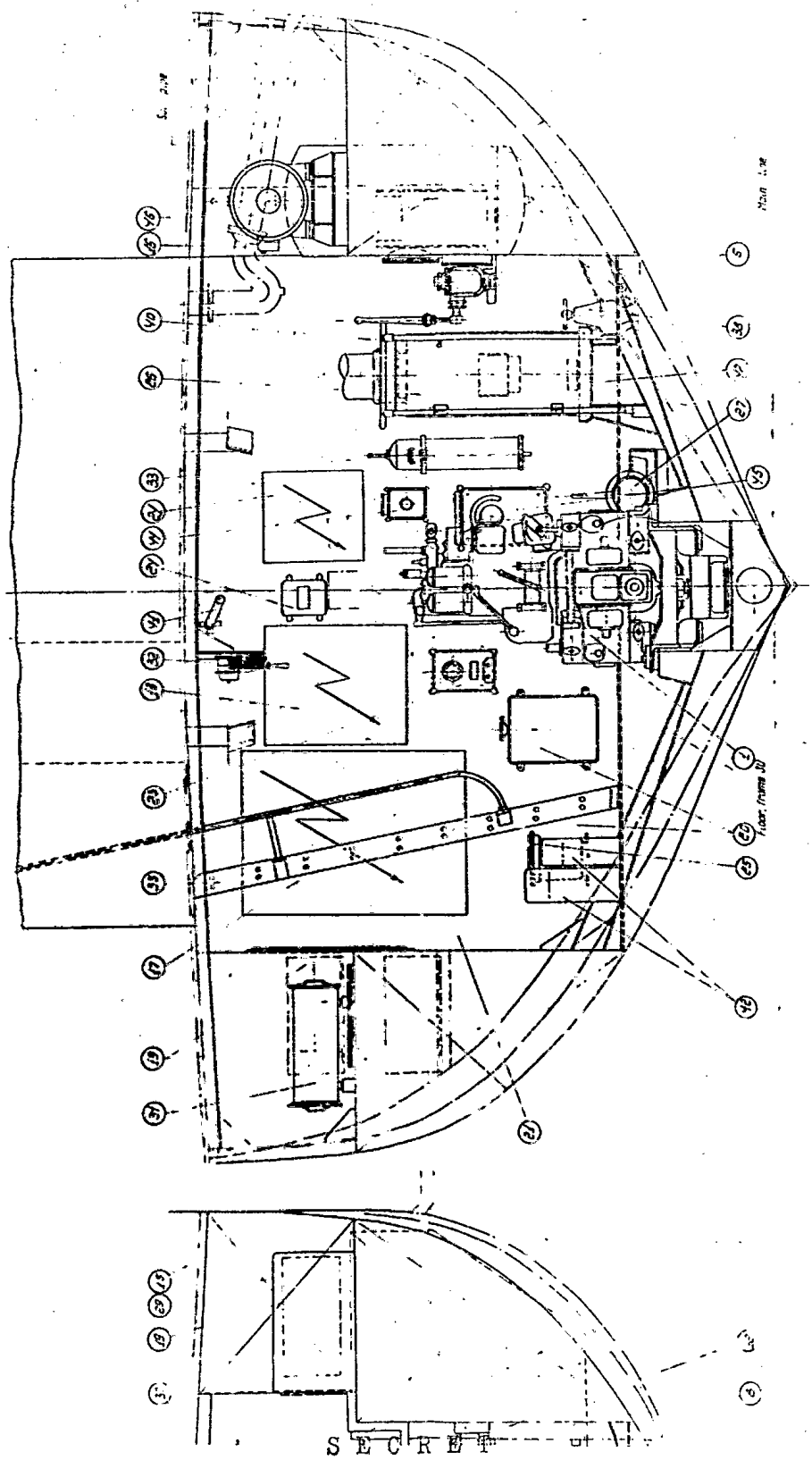

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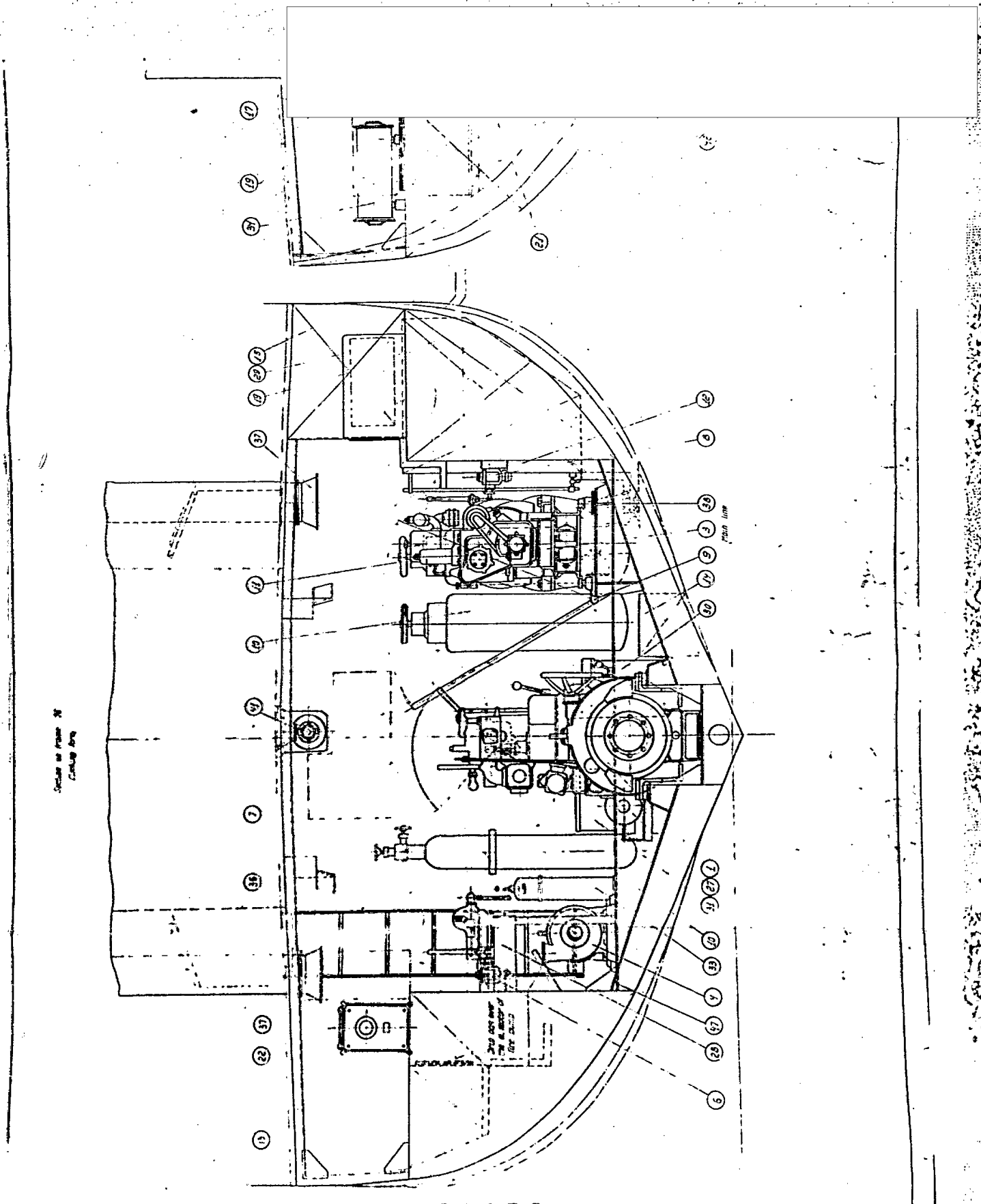

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FISH REFRIGERATOR, 190 TON CAPACITY

The small draught (2.75 m) of the ship enabling her to operate in coastal waters, in the mouth of a river or in large inland waterways is an important feature of the small capacity frozen fish vessel offered to the customer. Our frozen cargo ships are highly efficient both for large scale and relatively small scale fishing industries. They are indispensable as auxiliaries for small fishing craft lacking their own refrigerator space.

To decrease the draught, the ship's lines had to be rounded. However, her seaworthiness has not suffered, for her stability meets the standards set down for ships qualifying for service in any waters.

To facilitate going alongside ships at sea the refrigerator ship has been equipped with a cylindrical insert in her straight sides amidships.

Mechanization and automation of processing and freezing fish call for only a small staff. The fish freezing installations are automatic. They are run by only one operator.

The refrigerator ship is powered by a diesel-electric plant as the most economical for such types of vessels: it is highly manoeuvrable (easily lends itself to control) and offers unlimited power take-off for operations aboard and technical needs; it also allows to use the resources of power to the maximum.

I. CHARACTERISTICS

T y p e o f v e s s e l. Seagoing, steel, single-screw, single-decker, with freeboard, long forecastle deck, and double--deck wheelhouse superstructure in the fore part.

The ship is suited for any waters and is built to meet the requirements and regulations of the Register of Shipping of the U.S.S.R.

P u r p o s e . Reception of undressed and cleaned fish from fishing vessels at sea; freezing of fish and delivery of frozen cargo to port.

M a i n D i m e n s i o n s :

Overall length, m	55.4
Beam, m	9.5
Freeboard depth (at centre-line), m	4.5
Length of cylindrical insert in side, m	about 9.0
Displacement, light, tons	705
Displacement, loaded, t (on departure from port)	880
Displacement, loaded, t (on reception of load at fishery)	1000
Mean draught at 1000 t displacement, m	2.83
Deadweight, t	355
including cargo	190
fuel	102
lubrication oil	2
boiler feedwater	20
supplies, crew, and provisions	41
Cargo space capacity, cu.m	360
Fish hold, cu.m	35
Register tonnage:	
gross tonnage	728
net tonnage	230

The s e a g o i n g q u a l i t i e s of the ship are such to enable her to operate in the mouth of a large

river, lake or moderate seas.

U n s i n k a b i l i t y . The ship will remain afloat even if any one of her compartments is flooded.

The ship will maintain an even keel in any operational condition.

For purposes of ballasting (should this be necessary) the ship is equipped with ballast tanks with an overall capacity of 59 cu.m.

S p e e d. The speed trials have shown that the vessel develops no less than 9.6 kts, with power taken off the main propelling diesel generators for the refrigeration plant. With the main generators delivering all power for propulsion, the ship develops up to 10 kts.

E n d u r a n c e . The supply of provisions is sufficient to keep the ship 18 days at sea. Boiler feedwater and fresh water supplies for technical purposes may be replenished with the help of the evaporation plant.

The ship is so designed as to provide access to any mess deck (living space) or service compartment through internal passages, there being no need to go out onto the open deck.

II. H U L L

The ship's hull is made of mild steel (welded elements), the framing being made in keeping with the regulations of the Register of Shipping of the U.S.S.R. The partitions, decks and recesses, as well as the framing of the wheelhouse and rooms in the superstructure are made of an aluminium-magnesium alloy.

The hull has been built by the transverse framing system,

the frame spacing amidships being 600 mm and 580 mm at the extremities.

The hull is wholly welded, except for the jointing between the steel elements of the forecastle deck and the aluminium-magnesium elements of the superstructure, which are secured to one another with the help of aluminium rivets.

The stem is a welded unit, and the stern-post is a casting. The vertical keel in the middle part is box-shaped and 900 mm high; at the extremities it is a plain girder 700 mm high. The box shaped keel is 1100 mm wide. The internal passage in the box-shaped keel is used to house the pipelines.

The framing of the hull is assembled of bulb-plate steel and welded tee-bars and beams. To save in weight and in the amount of welding, some of the recesses are made of corrugated material. The body is reinforced for cruising in broken ice.

The bottom plating is 8-9 mm thick; the garboard strake — 11 mm; shell plating — 8-9 mm; deck plating amidships — 8 mm and 6 mm at the extremities.

The compartments (rooms) are insulated with artificial fibre and porous plastic plates. The floor, as well as the sides and bulkheads from the inner bottom one metre up are insulated with mineral felt. The porous plastic plates are made waterproof.

The radio room, annunciator room, and the trunks of the engine rooms are sound insulated.

The deck-heads in all the compartments and rooms, except for the radio room and annunciator room, are lined with aluminium-magnesium sheeting. The deck-heads, the partitions and the floor of the radio and annunciator rooms are lined

with birch ply-wood nailed to wooden battens. The ply-wood lining is covered with linoleum.

The partitions and bulkheads of the living quarters, mess and club rooms, wheelhouse and chartroom are lined with decorative fire-proof ply-wood. The bulkheads and partitions of the galley, wash-rooms and heads are covered with laminated plastic material. The deck-heads and partitions (bulkheads) of the refrigerated rooms are lined with aluminium-magnesium sheeting, and the floor, with wooden planking nailed to wooden battens.

Coating of decks. In the holds the decks are coated with a cement lute, in the refrigerator rooms, wash-rooms, heads and galley, with ceramic tiles, and in all the other rooms --living quarters, mess and club rooms — with non-inflammable or flame resistant linoleum. In the freezing chamber, fish store, refrigerator plant, the open space of the forecastle deck, lower bridge and upper bridge are covered with non-slip putty. The open space of the upper deck is covered with planking.

The rooms and compartments are decorated with ornamental fireproof ply-wood. The curtains are made of non-inflammable fabric.

F u r n i s h i n g s .

The living quarters of the crew are well furnished. The officers quarters are equipped with refinement.

The furniture in the living quarters, mess and club rooms is made of a variety of brands of wood or is veneered. In the galley, sick bay and store rooms the furniture and other items are made of metal.

The galley is equipped with an electric range, electric refrigerator, electric boiler, kitchen robot and other necessary

items. The laundry equipment is electric.

III. SHIP'S GEAR AND MECHANISMS

A n c h o r G e a r . The ship is equipped with two bower anchors and one spare Hall's anchor, each weighing 800 kg. There is also a stream anchor weighing 300 kg. The anchor chain for the bower anchors is of 34 mm gauge links. The overall length of the chain is 425 m. The stream anchor is fitted with a 22 mm steel cable 125 m long. The cable is wound on a reel. The bower anchors are weighed and lowered with the help of an electrically driven or hand operated 18/5 kW windlass. The stream anchor is weighed and lowered with the help of an electric loading crane or mooring winch (capstan).

S t e e r i n g G e a r . The rudder is of the conventional streamline type. The rudderhead is forged in one piece. The steering engine is electrically driven or hand-operated, with a turning moment of 3 tm. The time required to put the rudder from hard over to hard over at full speed ahead (with the help of the steering engine) is 30 sec , whereas by hand it is 60 sec.

S h i p ' s L i f e b o a t s a n d R a f t s. The ship is equipped with two wooden lifeboats (rowing) seating 20 men each, two aluminium-magnesium liferafts for 6 persons each and a barbour boat. The life boats are lowered and hoisted aboard with the help of gravity davits equipped with electric winches which can also be operated by hand. The harbour craft is launched and raised with the help of an electric crane. The life rafts are secured with the help of gripe lashings with automatic releases which function as soon as the rafts touch water.

L o a d i n g D e v i c e. The loading device consists of a three-ton electric jib crane with a 3.5 m boom swinging outboard.

M o o r i n g F i t t i n g s . The mooring fittings are of the conventional type normally installed in such vessels. The fore mooring lines are heaved in with the help of windlass heads. The aft lines are heaved in with the help of the capstan.

For towing the ship is equipped with two forward and two aft towing bitts and one towing hawse-hole in the bows. The 22mm gauge towing line, 175 m long is stowed on a reel.

The m a s t s -- the foremast and mainmast -- are of the collapsible type.

F i t t i n g s . The hatch covers and doors are both watertight and gastight (airtight). The height of the coamings meets the standards set down in the regulations of the Register of Shipping of the U.S.S.R.

The cargo hatch is closed with the help of two hinged hatch covers. The covers have rubber seals and are equipped with quick working bolts and snackets. The covers are heat insulated. Normally the hatch covers are opened with the help of the ship's crane.

IV. PROPELLING MACHINERY, AUXILIARY POWER, AND PIPING

The ship is propelled with the help of a diesel electric unit consisting of two diesel driven generators supplying power to one propelling motor.

There is also an auxiliary source of power -- a 100 k diesel generator.

Steam is supplied by an auxiliary boiler with a capacity of one ton per hour at 5 kg per sq.cm.

The supply of fresh water and boiler feed water is replenished by an evaporator with a capacity of 3 tons per day.

The main diesel generators are of the A.C. three-phase type. They develop 270 kW each at 380 V and 500 r.p.m. Both the diesel engine and the generator are mounted on a common bed-frame which in turn is secured on shock absorbers to the foundation plate of the ship.

The diesel engines that drive the generators are of the six-cylinder in-line vertical type. The engines are compressorless; they operate on the four-stroke cycle and are equipped with trunk pistons. The engines are gas turbo pressure charged.

The engine characteristics are as follows:

Rated power, h.p.	- 400
R.p.m. at rated output	- 500
Cylinder bore, mm	- 250
Piston stroke, mm	- 340
Compression ratio	- 12-13
Average speed of piston, m per sec	- 5.67
Turbo pressure charge, kG/cm^2	- 1.35
Specific fuel consumption, g./B.H.P.-hr	- 170

Fuel -- diesel, cetane number 50, coefficient of viscosity 1.15-1.29°.

Both the main and auxiliary engines are lubricated with the help of pumps installed on the units. The lubricating oil is purified by strainers and centrifugal purifiers. The lubrication system consists of steel piping; the accessories and passage connections are either of steel or brass.

The cooling systems of both the main and auxiliary diesel generator units are of the closed cycle type, fresh water being used as the cooling agent. There are two centrifugal cooling pumps with a capacity of about 25 cu.m per hour installed in the vessel. One of the cooling pumps is mounted in the propelling motor space and the other in the engine and boiler room. The piping of the cooling system consists of copper, copper and nickel alloy, and steel tubes; the accessories are of bronze and steel.

The fuel by-pass and fuel feed lines are operated by an electric pump with a capacity of about 3.3 cu.m per hr; one of the two jet pumps with a capacity of about 200 kg per hr; two hand-operated pumps plus a fuel spearator, with a capacity of about 500 l per hr; and also by fuel delivery pumps. The system is provided with fuel strainer and filter units.

The exhausts -- separate for each diesel engine -- are mounted in the smokestack; the exhausts are heat insulated and are equipped with expansion pieces.

S t a r t i n g a n d O p e r a t i o n o f t h e E n g i n e s . The main and auxiliary diesel generators are started and stopped from control posts in the diesel generator room. The propelling motor is remote controlled from the wheel-house or from the control post at the main switchboard.

C o m p r e s s e d A i r S y s t e m s. The high and low pressure systems are operated with the help of two electric air compressor units with a capacity of about 10 cu.m per hr. each, boost pressure being 60 kG/sq.cm; two compressed air cylinders with an operating pressure of 60 kG/sq.cm, with a capacity of 410 l each for starting the diesel engines and air spout; and also a compressed air cylinder for current

needs, with a capacity of 200 l, and pressure -- 30 kG/sq. cm. The compressed air pipelines are of steel; the accessories are likewise steel or brass.

The engine and boiler room is ventilated with the help of two ventilator fans each capable of delivering 18000 cu.m per hr. The heated air is removed from the engine and boiler room as a result of the suction of air by the main as well as auxiliary diesel generators, provision of fresh air being made by the electric ventilator fans of the boiler, and natural draft through the skylight. The propelling motor space is ventilated by mechanical means -- plenum and exhaust ventilation -- by two electric blowers capable of delivering 1500 cu.m per hr each.

Over the main diesel generators girders for the suspension of [illegible] electric telphers or pulley blocks have been installed.

The mechanical repair and electricians workshop is equipped with an engine lathe, tool-grinding machine, upright drilling machines and work benches with vices.

Auxiliary Boiler. The boiler is of the vertical water-tube type with an output of one ton per hour. It burns black oil with a coefficient of viscosity of 2.5-5.0°. The boiler is fitted with two electric feed pumps with an output of 3 cu.m per hour each, two jet pumps (one of these is an emergency pump) each with an output of about 200 kg per hr , an electric pump which automatically feeds the hotwell tank, sectional preheater of boiler fuel, condenser for cooling the condensate flowing into the hotwell tank, boiler forced draft electric blower capable of delivering 200 cu.m per hr , and a

number of tanks. The piping -- the fuel feed line, feed water line, live steam and pre-heater lines -- is made of steel. The accessories are likewise steel.

E v a p o r a t o r . The ship is equipped with an evaporator with a capacity of 3 tons of fresh water per day. The unit consists of a distiller, pre-heater of water, condenser, aerator, aerator blower, cooling pump with a capacity of 25 cu.m per hr. The latter may also be used in an emergency pump to cool the diesel generators or the condensate before it is fed into the hotwell tank. The distilled water is pumped with an electric pump with an output of one cu.m per hr. The distilled water tank holds 180 l.

S h a f t i n g a n d P r o p e l l e r . The shaft line is made up of the propeller and thrust shafts. The shafts are of a solid steel alloy. The shafting rests on three bearings. Two of these are rubber and metal bearings, whereas the third -- the radial thrust bearing -- is a Mitchel type bearing. The thrust bearing is also a Mitchel type bearing. The semi-coupler on the propeller shaft is provided with a band on which a brake is installed. The brake secures the shaft in case the ship is towed at speeds higher than four knots. At the flanged joint connecting the propelling motor with the shaft line there is a shaft turning gear unit which may be turned either with the help of an electric or hand drive.

The ship is equipped with a four-blade steel propeller.

V. SHIP'S SYSTEMS

The f i r e s e r v i c e w a t e r s y s t e m is operated with the help of an electric centrifugal fire service pump capable of delivering 63 cu. m per hr. with a 100 m head. The water is fed into the system through a separate kingston valve. In case of emergency an extra supply may come from the diesel engine cooling water main. The fire service main is a line. The fire cocks are so arranged as to cover any possible fire inside a compartment with two fire hoses and with three hoses on any of the upper decks. The fire service water main system is provided with two water posts to which hoses from shore pressure line may be connected. The number of fire hoses corresponds to the number of fire cocks in the main (altogether 23). The fire hoses are of rubberised linen; they are 10 m long for the interior and 20 m long for the upper decks. The fire service pipelines consist of seamless steel pipes coated with bakelite varnish both inside and out. The pipes are connected with the help of flanged joints. The fittings are made of bronze. They are protected with zinc protectors.

L i q u i d C h e m i c a l F i r e - F i g h t i n g S y s t e m . This system is installed in the engine and boiler room, hold, propelling motor room, paint locker, and fuel tanks outside the double bottom space. The fire extinguishing agent is stowed in special tanks equipped with a metering device. The agent is fed into the threatened space with the help of compressed air from the cylinders. The system is operated with the help of a remote control device installed in the wheel house. A sensitive-to-heat automatic fire alarm signal is likewise installed in the wheel house.

D r a i n a g e S y s t e m. The drainage system is operated with the help of two electrically driven vertical centrifugal pumps with a self-suction attachment. The pumps have an output of 40 cu. m per hr delivering a 30 m head and a suction head of 6 m. The bilge water may be purified as a result of the removal of the oil admixtures with the help of the bilge water separator with a capacity of 10 tons per hr. The separator is operated with a reciprocating pump. The pipelines of the drainage tanks are housed in the corridor in the double bottom space. In case of an emergency the propelling motor room is drained by the pump circulating the coolant of the refrigerating machine, and the engine and boiler room — by the pump operating the pipeline delivering the cooling water to the main diesel engines. The outboard fittings as well as the hydrants, cocks and valves are of bronze, whereas all the other fittings are of steel.

B a l l a s t S y s t e m. The ballast system is designed to fill up the ballast and fuel-ballast compartments with water and when necessary to remove the water from them. The fuel-ballast compartments are filled through the ballast water main up to the valve chests of the fuel feed pipeline, and therefrom through the fuel oil filling and inter-tank lines. During the flushing operation of the fuel-ballast compartments the water ballast may be purified. The flow of water in the ballast system is controlled through cocks from the engine room. The ballast system is operated with the help of two vertical centrifugal drainage pumps with a capacity of 40 cu. m per hr. The system consists of seamless steal pipes treated with bakelite varnish. The outboard fittings, as well as the hydrants, cocks and valves are of bronze, whereas all the other fittings are

of steel.

O u t b o a r d W a t e r S y s t e m . The outboard water system is operated by a horizontal centrifugal self-suction sanitary pump with a capacity of 3 cu.m per hr delivering a 40 m head and a suction head of 5 m. The pump delivers the water into a pressure tank. The pump is cut in and cut out automatically by a relay. The outboard water may be heated for use in the bath and laundry by independent water heating unit. The pipes of the outboard water system are of steel or polyethylene; the fittings are of bronze; and the connections are of the sleeve or flanged type.

F r e s h W a t e r S y s t e m . The fresh water supply is stowed in two inboard tanks. The reserve of fresh water is about 27 cu.m. In addition to these tanks, there are two reserve tanks with a joint capacity of about 13 cu.m. These tanks are used to stow fresh water from the evaporator. The electric sanitary pump operates automatically; it is cut in and cut out by a relay. The sanitary pump delivers the water to the pressure tank from where it flows to the consumers. The ship is equipped with a centralized hot fresh water supply to the galley, sick bay, wash basins, bath and laundry. The hot water is pumped by a circulation pump with a capacity of one cu.m per hr delivering a 10 m head. The temperature of the water is maintained at 40-60°C with the help of a regulating thermo-relay unit.

S e w a g e S y s t e m . The sewer pipes from the wash basins, washers and deck scuppers inside the compartments are connected to sewage disposal mains which carry off the sewage to the sewage tanks. The sewer pipes from the heads are like-

wise connected to mains leading to the fecal tank. The fecal and sewage disposal tanks are vacated with the help of special sanitary pumps with a capacity of 28 cu. m per hr. delivering a 15 m head. The sewer pipes are of polyethylene, and the fittings are of bronze and steel.

H e a t i n g S y s t e m . The heating system consists of a single main, whereas the steam piping for the ship's internal needs consists of a double line. Only saturated dry steam is used. In the heating system a pressure of 3 kG/cm^2 is maintained and in the shipboard steam piping — 5 kG/cm^2. The radio room, control post, log trunk and echo depth sounder trunk are heated with electric heaters.

V e n t i l a t i o n S y s t e m . The refrigerating machine compartment is equipped with a forced exhaust and plenum ventilation system. In winter (or cold weather) the plenum system delivers pre-heated air. The mess room, sick bay, cabins, wheel house and chart room, galley, bath, shower and wash rooms, radio room, and provision store have a forced plenum ventilation (with pre-heating unit for winter) and natural draught exhaust. The tiller flat has a natural intake and forced exhaust ventilation. To subdue the noise, all the blowers are installed on shock absorbers, the delivery and return pipes of the blowers being equipped with rubber tubing.

VI. ELECTRICAL EQUIPMENT

The main supply in the ship is the three-phase A.C. supply without a zero point terminal. The power supply voltage is 380 V and that of the propulsion circuit — 650 V. The lighting, signal and navigation lights, galley, sick bay and sani-

tary units work from a 127 V supply, and the portable lights -- from a 12 V supply.

The ship's electric power plant consists of two diesel generators capable of delivering a constant power of 270 kW (400 V) at 500 r.p.m. There is also an auxiliary 100kW generator driven by a six-cylinder diesel engine with a power output of 150 h.p. at 750 r.p.m. All the generators are fitted with static automatic voltage regulators. The ship can also receive power supply from a 380 V three-phase shore plant.

The speed of the 270 kW diesel generators is controlled with the help of servo-motor switches of the main distribution switchboard. The 100 kW diesel generator is controlled with the help of remote control unit installed in the main distribution switchboard too. The storage batteries are recharged through selenium rectifiers.

The electric power supply is distributed through a feed group system. To execute the functions of distributing power, regulating the speed of the main and auxiliary generators, and controlling the generator performance, a main distribution switchboard has been installed in the engine room. The switchboard is of the waterproof type. The control and measuring instruments, safety and signalling equipment are vibration-proof.

The wiring diagram of the main distribution switchboard ensures trouble-free functioning over prolonged periods of all three generators cut in parallel into the power take-off bars during the motion of the ship. It ensures the prolonged delivery by the 100 kW generator of power to the bars of the main distribution switchboard while in harbour. It ensures supply for the auxiliary mechanisms, which is delivered by the ship's generators

or the shore installations, as well as other possible combinations for the operation of the power units.

The generators are cut in with the help of automatic triple-pole selector switches which protect them from short circuits too.

The outgoing feeders of the main distribution switchboard are connected to the bars through triple-pole set switches with maximum split contacts to protect the feeders from short circuits.

Heavy current is carried by quality cable which is screened at certain points.

The propelling motor is of the asynchronous type with a phase wound rotor. The motor is a 650 V unit capable of developing a constant operating power of 475 kW, $\cos\varphi = 0.77$, $\eta = 0.915$. The propelling motor is fitted with a forced closed cycle ventilation system with an independent blower delivering pre-cooled air from a special cooling installation. The propelling motor is protected with moist-proof insulation. The motor is fitted with plate blocks with built-in rolling friction bearings working on consistent grease.

To regulate the voltage of the A.C. supply to the propelling motor, a special induction control unit is provided with a constant internal output of 400 kVA at $\cos\varphi = 0.5$, the voltage in the primary coil being 380 V and the secondary voltage — 0÷650 V. The voltage is regulated by remote control with the help of an electric servomechanism.

C o n t r o l o f P r o p e l l i n g M o t o r S p e e d . Within the range of 290-240 r.p.m. the speed of rotation of the propelling motor is regulated by cutting in

consecutively four resistance steps into the circuit of the rotor and gradual change in voltage. A drop from 240 to 0 r.p.m. is achieved through a gradual decrease in the voltage fed to the stator winding of the propelling motor, which is performed with the help of the induction regulator. The propelling motor is put into the reverse by cutting in resistances into the circuit of the rotor, gradual decrease of voltage to 0, changing the phase sequence, and then gradually building up the voltage, as a result the motor increases speed in the reverse direction. The propelling motor is wholly controlled with the help of a servo-system ensuring any set speed (within permissible limits) without any assistance from the engine room branch.

The diesel generators and the propelling motor are automatically controlled. This means that:

a) the voltage is maintained automatically; the reactive load is distributed automatically with the help of a static self-excitation system;

b) the temperature of the water and oil is automatically maintained at a set level with the help of thermostats; a signal indicating the fuel level in the settling and consumption tanks is given automatically; and air is pumped into the starting compressed air cylinders when required.

The circuit of the propelling motor is protected with a block system which implies:

a) maximum overload protection in the main circuit with the help of automatic selectors;

b) overload protection of the main diesel generators and propelling motor with the help of an overload relay which switches on the light and sound signals and cuts in a resistance into the rotor circuit (of the propelling motor);

c) protection of the propelling motor against overheating by giving sound and light warning signals indicating that cooling air and water have become too hot;

d) operation of the block system which cuts off the automatic selector of the induction regulator from the bus-bars of the main distribution switchboard;

e) operation of a block system which renders impossible the switching over of control posts with the circuit under tension;

f) protection of the control and measuring instruments and electrical circuits with the help of safety fuses;

g) operation of sound and light warning signals indicating that the cooling water and lubricating oil have become overheated and that the oil pressure in the lubrication system has dropped.

The electric drives of the auxiliary machinery work on 380 V A.C. supply.

The electric motors of the starting compressors are fitted with a short-circuited rotor; they are capable of delivering a constant output of 4.5 kW at 1460 r.p.m. The motors are spray-proof.

The electrical equipment of the auxiliary boiler is provided with an automatically controlled burning device.

The electric motor driving the windlass is fitted with a two-speed gear. It is a 380 V motor with an output of 18/5 kW at 1240/310 r.p.m. The motor also has a brake mounted on it.

The electrical equipment of the steering device consists of a 2 kW D.C. steering motor, A.C.-D.C. converters starting and control apparatus, and panels.

The mooring capstan is equipped with a two-speed electric motor with a short-circuited rotor. The motor is spray-proof and has a disc brake fitted to it. With the high-speed winding cut in, the motor delivers an output of 18.5 kW and with the low-speed winding -- 5 kW.

The electrical equipment of the loading crane includes the hoisting motors, swing boom motor and the boom length control motor. All the motors are fitted with short-circuited rotors and are spray-proof. All the equipment is mounted on the crane.

The water supply gear is driven by spray-proof electric motors fitted with magnetic starters. The mechanisms operating the pipelines are driven by similar motors which are, however, water-proof.

VII. ELECTRIC LIGHTING, NAVIGATIONAL AND IDENTIFICATION LIGHTS

The ship is equipped with a unified lighting system which includes the main (internal and external) lighting mains, emergency (battery-fed) lighting, and the portable (low-voltage) lighting appliances. The emergency lighting circuit is connected to the main lighting system through permanent emergency lights. The emergency lights have built-in water-proof storage batteries and relays which automatically cut in the light as soon as the main lighting circuit is no longer under tension. The emergency lights are also fitted with battery chargers to re-charge the batteries from the main lighting conductors. The open part of the upper and boat decks is lighted with cross-tree lights installed on the upper and lower bridges. The doors leading to the open parts of the decks are equipped with interlock door switches.

The navigational lights, identification and signal lights receive current supply through a switch in the wheel-house by two independent feeders -- one from the lighting distribution switchboard and the other from the main distribution switchboard. The emergency (reserve) navigational and identification lights receive their current supply from 24 V storage batteries. The switches in the wheel-house are equipped with sound and light signals which indicate the failure of any light in the system. To send signals (in Morse Code, for instance) and also for lighting up objects there are two spotlights installed on the upper bridge (which may be used as blinker lights too).

VIII. INTERIOR COMMUNICATION SYSTEM

The ship is equipped with:

command group telephones for communication between the ship's command post and the executive posts;

engine-room group telephones for communication between the engine room and the various consumers of electric power, and also the officer's cabins;

general group telephones for communication between the officers, as well as between the officers and their respective commands;

telephones for communication with the shore when the ship is in port;

two-way telephones for communication between the wheel-house and the main distribution switchboard.

The telephones are sound-powered (non-battery type), the general group telephones being equipped with an automatic ship's service telephone system with 20 numbers.

The electric fire-alarm system consists of heat warning signal units installed in the compartments and receiving station which is in the wheel-house.

IX. NAVIGATIONAL MATERIAL

Gyro-compass, Type "Курс-4". The main unit, the power supply unit, as well as the other apparatus of the gyro-compass are installed in the wheel-house. Suspended gyro-repeaters are installed in the wheel-house and tiller flat. Bearing repeaters are installed on the wings of the lower bridge and also on the upper bridge.

Patent (Water Compression or Hydrodynamic) Log, Type ЛГ-2. The power supply unit of the log and the main instrument are installed in the log and echo depth sounder flat; the speed indicators and distance recorders are installed in the chart-room and wheel-house. A speed indicator is also installed in the engine room.

"Дельфин" (Dolphin) Fish Finder. This instrument is designed to discover fish under the vessel. It can also be used as a navigational echo depth sounder. The "Дельфин" (Dolphin) is capable of showing fish at depths up to 600 m with the help of the electronic marker (indicator) and up to 2400 m, with the help of the recorder unit. The recorder is installed in the chart-room and the indicator - in the wheel-house.

Dangerous Depth Detector, Type НОГ. For safe navigation the ship is equipped with a НОГ dangerous depth indicator which helps discover banks in shallow water. As soon as the waters under the keel become dangerously shallow the instrument starts to sound loud alarm signals.

Magnetic Compasses. The ship has two magnetic compasses -- a steering compass installed in the wheel-house and standard compass on the upper bridge. They supplement the gyro-compass.

Radio Direction Finder, Type CPII-5. The ship is equipped with a radio direction finder which is installed on top of the radio room.

Navigational Radar Set; Type "Donets" - 2(Donets-2). The aerial of the apparatus is installed on the upper bridge on a special collapsible mast. The indicator (screen) and the controls are housed in the wheel-house.

X. MEANS OF EXTERNAL COMMUNICATION

To ensure two-way communication with ships and shore stations, and to ensure safe navigation, the ship is equipped with the following radio apparatus which is installed in the radio room:

100 W medium and short-wave radio transmitter;

60 W emergency radio transmitter;

all-wave receiver, type "Volna" (Wave) -- two sets;

emergency radio receiver set;

emergency receiver of alarm and distress signals;

VHF radio-telephone station. Remote control post installed in the wheel-house.

VHF radio-telephone station for routine (ship-to-ship and ship-to-shore communication) installed on top of the radio room;

wave-meter heterodyne which gets its power supply from the switchboard of the radio room.

In addition to the above equipment there is also an automatic alarm and distress signal sender for automatic operation

of the emergency radio transmitter. A lifeboat transmitter--receiver set is also provided.

XI. REFRIGERATING, FREEZING AND FISH PROCESSING EQUIPMENT

The cargo refrigerating installation is of the compressor type using ammonia as a cooling agent. The plant is operated with the help of three compressor units, each with a cooling capacity of 37500 large calories per hr, the boiling point being minus 40°C and condensation point plus 35°C. The refrigerating plant is capable of providing simultaneously the necessary conditions for the following processes:

freezing in the quick-freeze chamber 15 tons of fish in blocks, lowering the temperature of the fish to minus 18°C in the course of 22 hours;

making in the ice generator (plant) 250 kg of salt water ice hash every hour;

storing in the cold fish store-room 15 tons of non-processed fish and maintaining a temperature of 0°C;

storing 160 tons of frozen fish in the refrigerator space in which a constant temperature of minus 18°C is maintained;

lowering the temperature of 15 tons of fish from minus 15°C to minus 18°C, which went up as a result of handling, packing and transportation.

The quick-freeze unit, ice generator, refrigerator space and intermediate store are cooled as a result of the direct effect of evaporation of ammonia. The refrigerating chamber and refirgerator space are cooled as a result of the intensive circulation of cold air. The intermediate store is cooled with the help of bulkhead batteries.

The refrigerating installation (while the ship is taking in fish at sea) is operated by two compressors working constantly to maintain the set temperature in the freezing plant and refrigerator space. The third compressor is for emergency cases — it is cut in as soon as one of the operating compressors fails, or for generation of ice and cooling of the intermediate store. During passage it is normal for only one compressor to function.

The refrigerating machine flat houses three two-step ammonia compressors, type ДАУ-50, two horizontal condensers with an evaporative surface of 25 sq. m each, two intermediate vessels, two oil separators of the intermediate stage and one of the higher stage, five oil collectors, centralized lubricating unit, and two line receivers — one of these is a drainage receiver — an ammonia control unit, drainage receiver, control and measuring instruments, automatic control instruments and automatic safety devices to protect the refrigerating machines and electrical equipment from possible damage.

The refrigerating installation is fitted with automatic control instruments, devices for maintaining the set performance and automatic safety units to prevent breakdowns by cutting out automatically the compressors and expelling ammonia overboard through underwater safety valves. The refrigerating space and intermediate store room are cooled with the help of ribbed air separators with direct evaporation of ammonia. The refrigerating space is air cooled, the air being forcefully circulated by axial blowers. The frozen vapour is removed from the air coolers of the quick-freeze plant, the refrigerating

space and batteries of the intermediate store room in centralized manner with the help of hot ammonia vapour. The pan of the quick-freeze apparatus is also heated with the help of hot ammonia vapour. The units are filled with ammonia through automatic thermo-controlled valves which are designed to maintain a pre-set temperature and a safe level of ammonia.

A u t o m a t i c Q u i c k - F r e e z e P l a n t. The plant freezes 15 tons of fish in 22 hours of continuous operation. The fish is frozen in blocks of 800x250x60 mm. The fish is gradually cooled by a continuous stream of cold air from the air separator. The air in the space is circulated by a centrifugal blower. The mean temperature in the tunnel of the plant is minus 30°C. To keep the mean temperature at a uniform level the air cooler in the tunnel is divided into two tiers in which the supply of liquid ammonia is independently controlled. The automatic quick-freeze plant consists of a conveyer to shift the block moulds inside the freeze tunnel and an isolated refrigerating chamber to house the air cooler, blower and air stream chutes.

I n t e r m e d i a t e S t o r e R o o m. The intermediate store room is designed to keep 15 tons of non-processed fish for current consumption. The temperature maintained in the room is normally 0°C. The store room is capable of holding 16 tons of frozen fish at 18°C en route to port from the fishery. The low temperature in the room is maintained through the evaporation of ammonia in the smooth tubed bulkhead batteries protected by wooden fenders. To protect the batteries from the harmful effect of corrosion they are galvanised.

Refrigerating Space. The refrigerating space or hold is designed to lower the temperature of the frozen fish from minus 15°C to minus 18°C for storage of the fish at that temperature. The temperature is maintained at the required level with the help of air coolers in which ammonia is evaporated directly. The air is impelled through the air coolers by four axial blowers each delivering 4600 cu.m per hour. The cooled air is directed at the surface of the cargo with the help of four variable section air ducts fitted with controllable louvres. The cargo supporting grating on the inner bottom and the side and bulkhead guards form chutes in the refrigerating space thereby enabling the air stream uniformly to envelope the shielding with minimum losses due to filtration of the cargo. The air coolers are mounted in niches in the after bulkhead of the refrigerating space. The air coolers are protected by light removable guards.

The ice generator is capable of making 200 kg of salt water ice hash per hour which keeps the fish in the intermediate store cold.

There is also a fish pump aboard the ship to pump fish pulp and also for electric hauling of small fish. However, the fish pump is considered as extra equipment which is installed on the customer's special order.

Refrigerating Plant for Provision Room. This refrigerating plant is totally independent of the cargo unit. It is intended to cool the provision rooms; the meat store — to minus 10°C, fats store — to minus 4°C, and the vegetable and wet provisions store room — to plus 2°C.

The meat and fats store rooms are cooled with the help of batteries directly evaporating freon. The vegetable store is cooled by an air cooler which also intensively circulates the air in the chamber.

The provision room refrigerating plant consists of two automatic freon compressor-condenser units with a capacity of 1500 large calories per hour, the evaporation point being at minus 20°C and condensation point — at plus 30°C. In case one compressor unit fails, the other ensures the cooling of all the provision store-rooms. The refrigerating plant operates automatically. It is protected against injury resulting from faulty operation.

XII. PROCESSING AND FREEZING OF FISH

The catch delivered by fishing vessels is loaded aboard with the help of the cargo crane or the fish pump into the deck bunkers installed at the sides. The overall capacity of the bunkers is 7-8 tons. If necessary the fish may be weighed on a balance.

The fish processing line installed aboard the ship is operated from the starboard deck bunker. The fish is fed from the bunker into a vertical fish washing machine with the help of a conveyer and skip hoist. If necessary, the fish is sorted out while it is on the conveyer. From the washing machine the fish is fed into the bunker which feeds it into the freezing installation. The feeder is synchronized with the continuously moving block moulds which are connected to make a never ending line. The feeder fills each mould with a definite quantity as the line passes the bunker. Upon filling the moulds are lifted

with the help of an elevator onto the upper part of the conveyer line and are then carried into an isolated freezing chamber. After freezing the fish appears at the lower part of the conveyer line. The blocks are separated from one another on the outer side of the lower branch of the conveyer. The frozen fish blocks are fed onto the unloading device where they are glaced. From the quick-freezing installation the fish blocks are fed onto the packing line and from there to the refrigerating space for storage.

The freezing installation is operated and serviced by only one operator. The entire processing cycle, including the washing operation, packing the fish into the moulds, passage of the fish to be frozen through the freezing installations, the thawing of the moulds to separate the frozen fish blocks from them, glacing of the fish blocks and feeding them onto the packing line, is performed automatically from beginning to end. The evaporation point of ammonia in the installations and the temperature of the air in the freezing tunnels is controlled by thermal sending units which direct the pulses to the board of the telethermometer.

Should the vessel take in more fish than the freezing installations are capable of handling in a day, or should it be necessary to preserve non-processed fish in conditions of high atmospheric temperatures, the fish is fed with the help of the conveyer from the deck bunker to the cooled intermediate fish store. There the fish is packed in boxes in ice hash. The non-processed fish is fed from the intermediate store to the washing machine with the help of movable conveyers and the skip hoist.

The boxes of frozen fish are unloaded from the refrigerating space through the cargo hatch with the help of the cargo crane.

XIII. REPLACEMENT PARTS, STANDARD EQUIPMENT AND TOOLS

All the mechanisms installed in the ship are supplied with replacement parts and special tools to ensure their normal operation and maintenance.

In addition to the special tools for the mechanisms, the ship is supplied with a complete set of carpenter's tools, fitter's set, splicing tools, cutting tools, measuring and control instruments and appliances.

The ship is supplied with all standard equipment essential for normal operation:

navigational - inclinometers, mechanical depth sounder and sounding lead, log, sextants, astronomical and optical instruments, nautical instruments, signal means, etc.;

collision mat with equipment, special tools for knotting and splicing and woodwork, and emergency materials;

lifesaving - life rings, life buoys, life jackets, etc.;

fire-fighting — hand operated fire service pump, buckets, crowbars, fire extinguishers — foam and CO_2 type — etc.;

boatswain's stores, painting tools - cramp irons, shackles, lanyards, cans, buckets, brushes, etc.;

other ship's equipment — oilers, cans, funnels, lights, locks, fire-hose, water hose for taking water from shore, diesel and boiler fuel hoses and lubrication oil hoses, boiler feed water hoses, hoses for pneumatic tools, fecal disposal hoses, hoses for taking steam from shore, connectors, adapter nuts, etc.;

[redacted]

electrical equipment and supplies - electrical appliances such as lights, torches, vacuum cleaner, measuring and control instruments, electrician's tools, expendable materials, etc.;

supplies— curtains, table oil-cloths, carpets, strip-carpets, flat-irons, cabin furnishings and galley utensils.

[illegible] order No. [illegible]

[illegible] Zaitseva L.A., Drozdova A.P.

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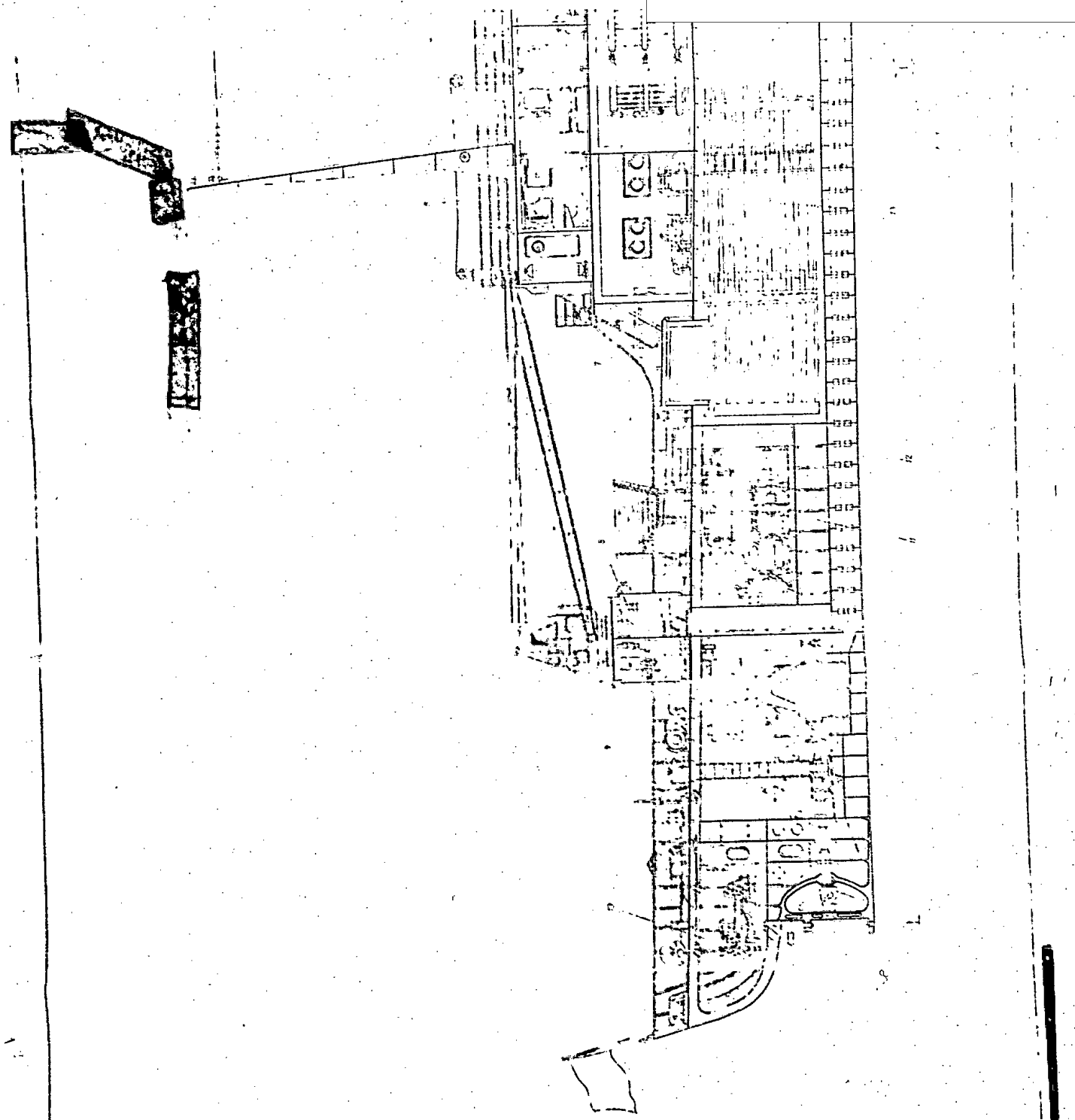

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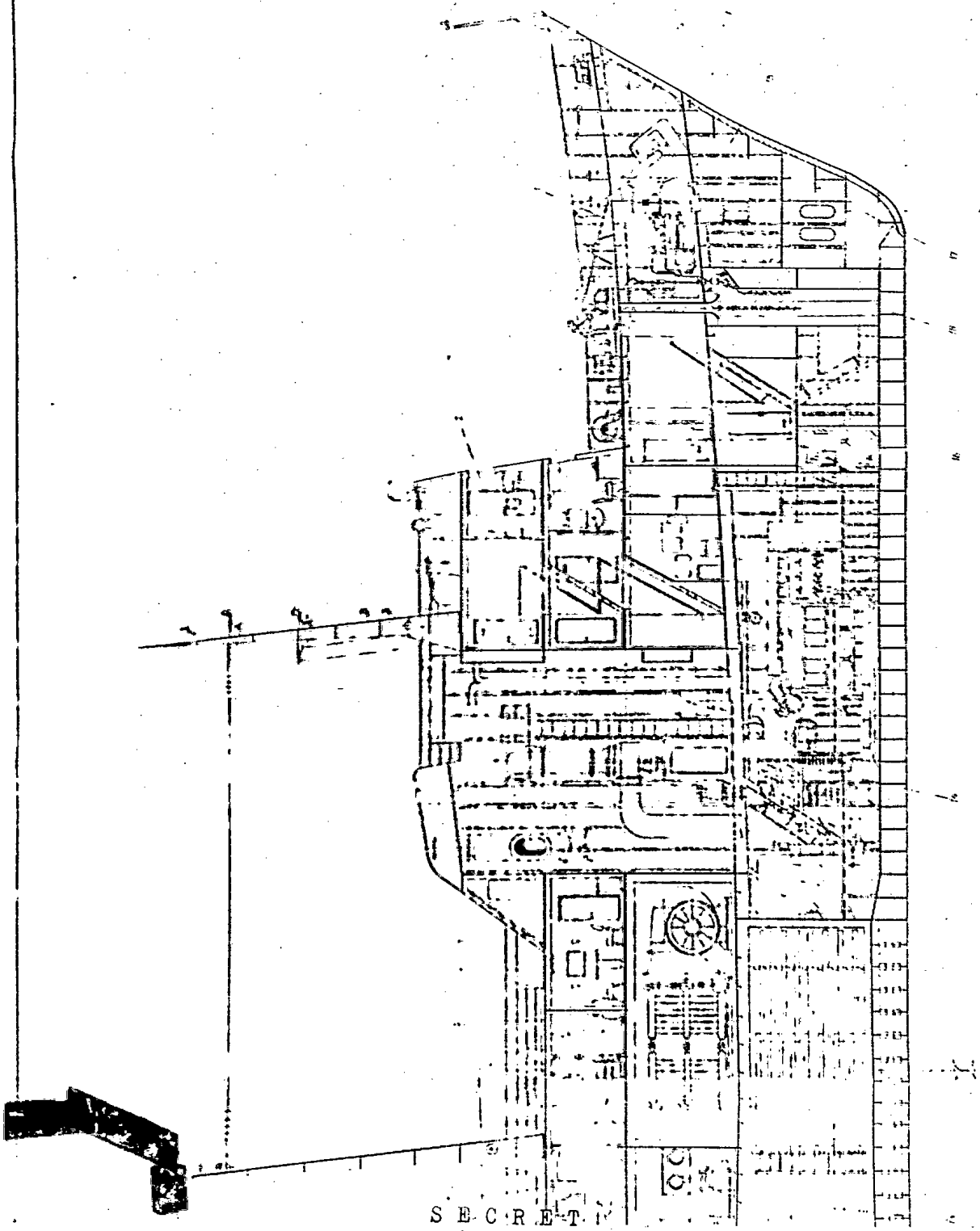

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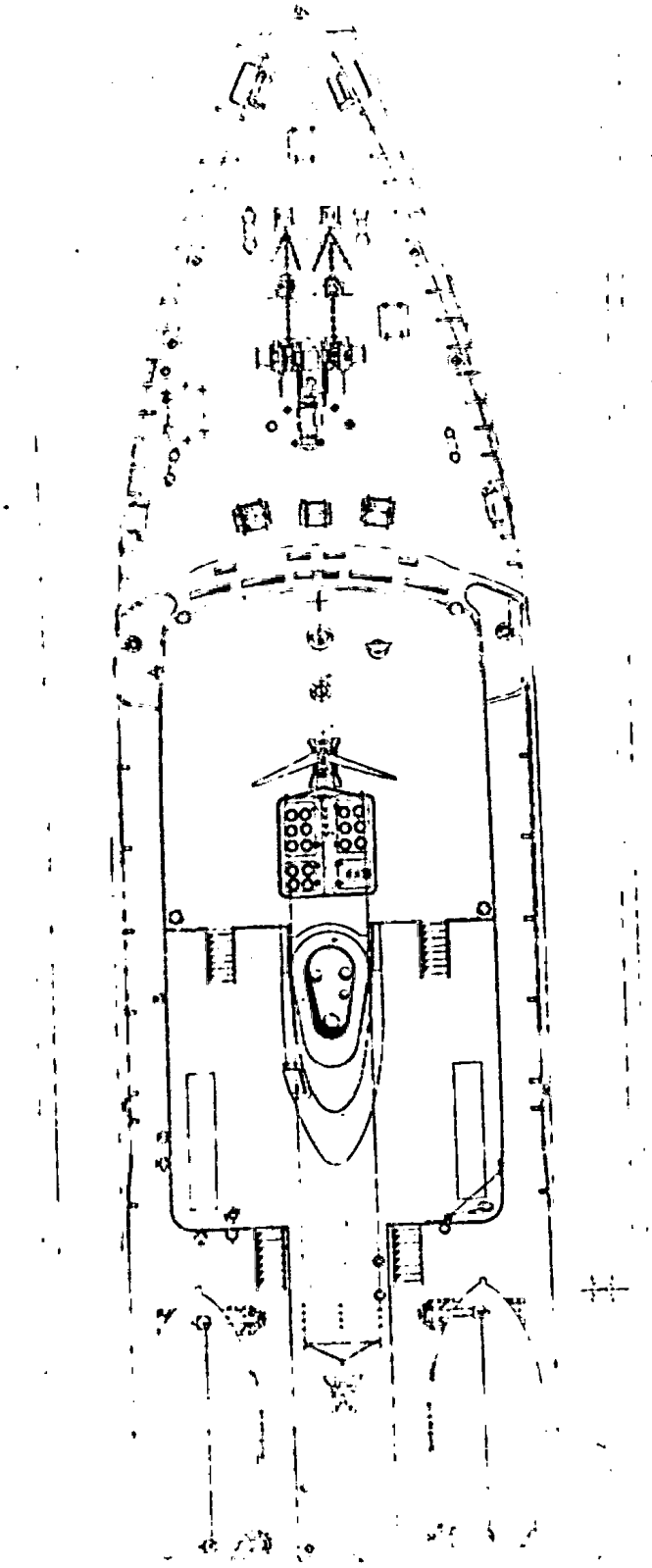

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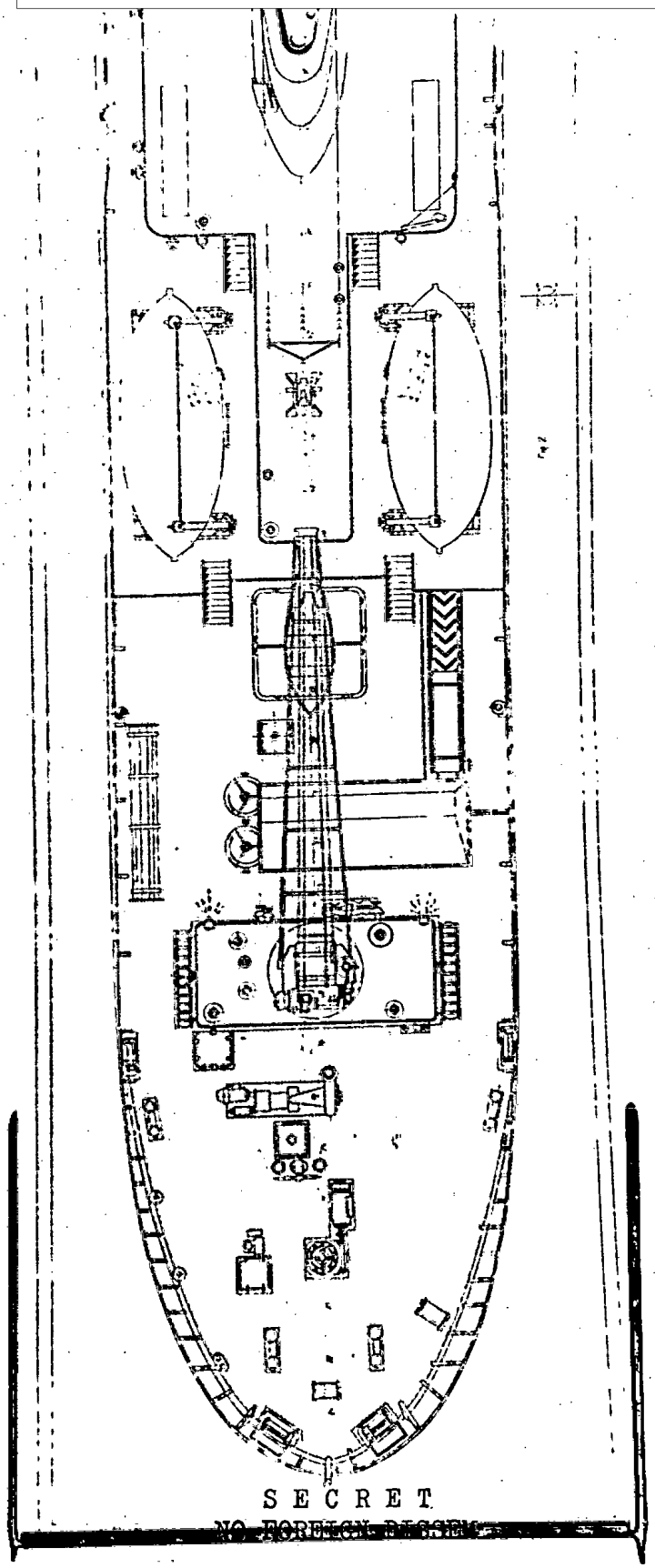

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FIG.3. Forecastle deck:

20 - chief engineer's cabin; 21 - wardroom; 22 - galley;
23 - ice generating plant; 24 - life boat for 20 people;
25 - crew's mess deck; 26 - master's stateroom

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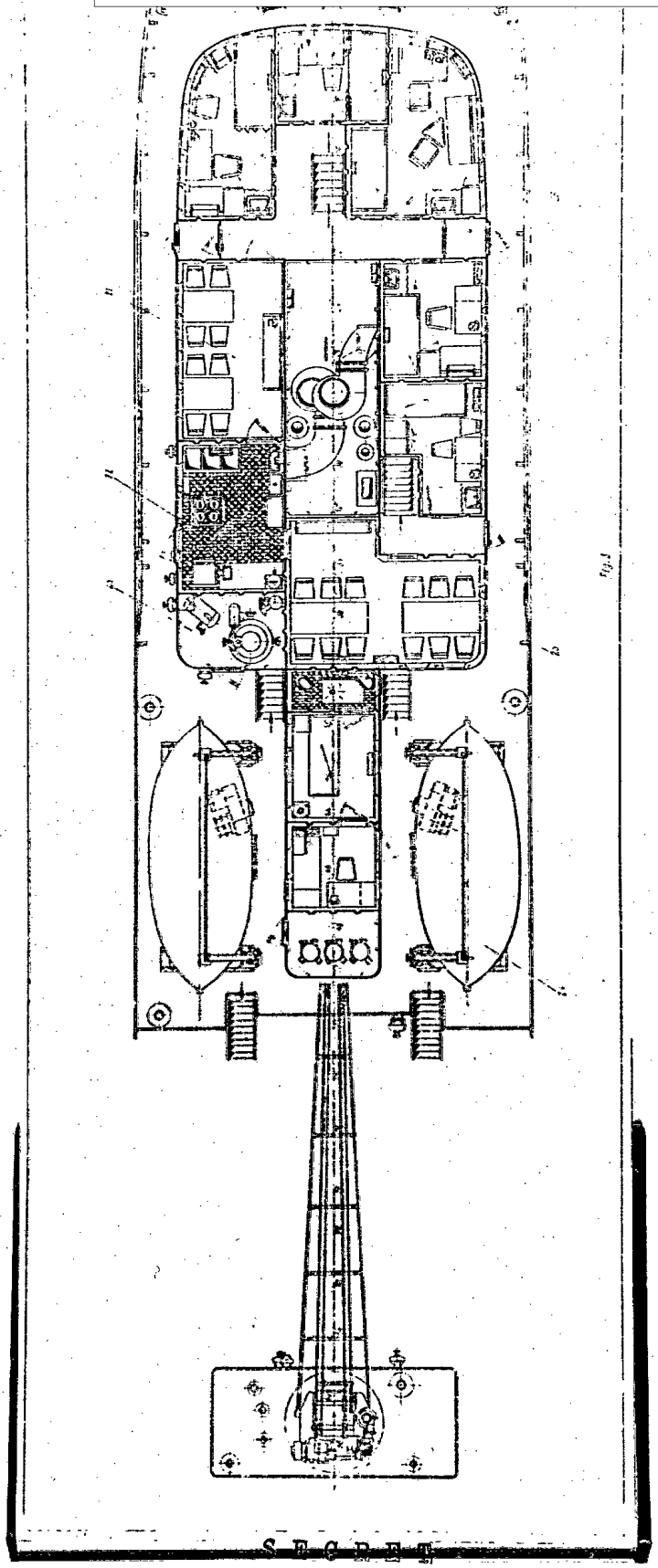

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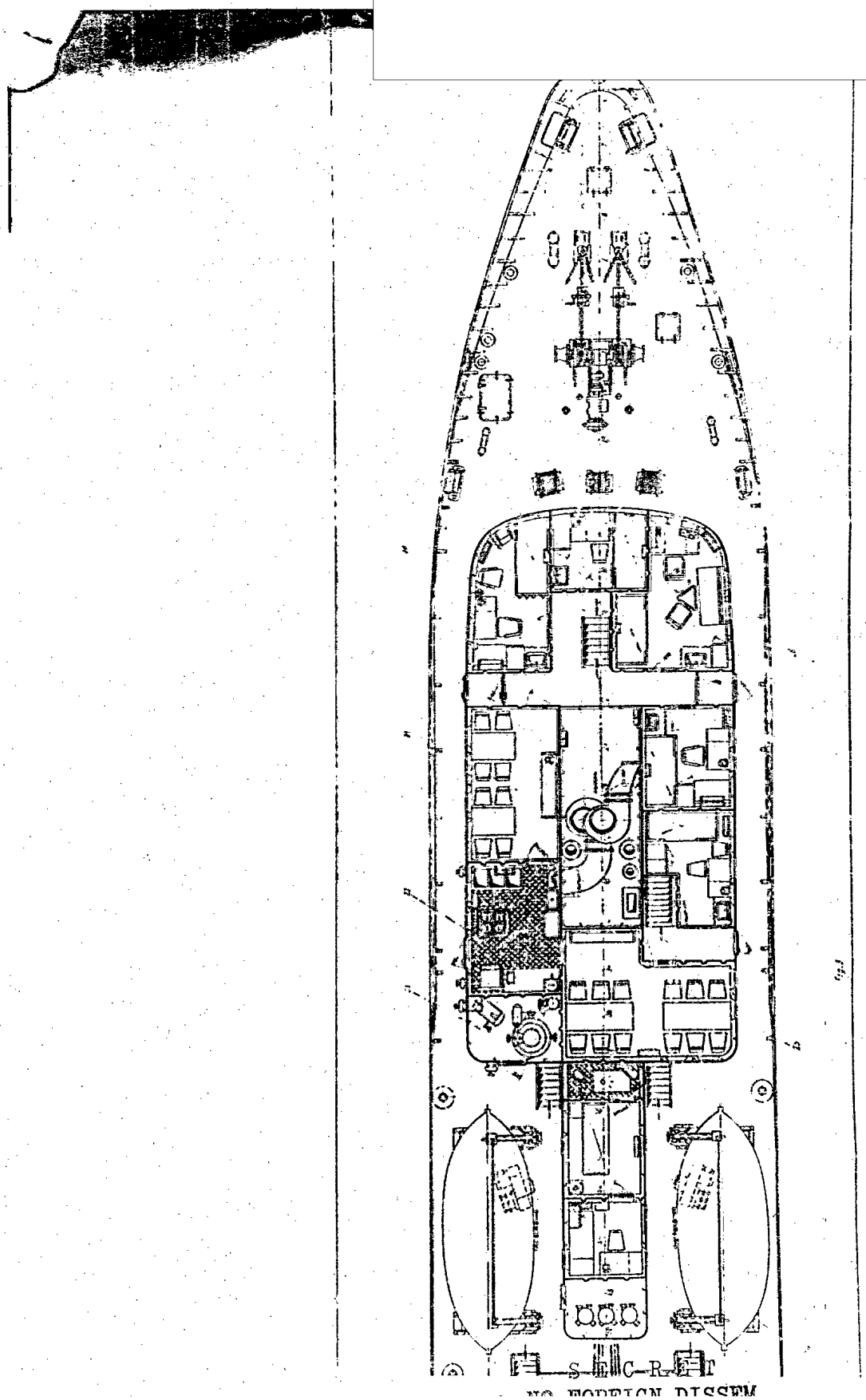

FIG.4. Lower Bridge:

2 - wheel-house; 3 - drying room; 27 - radio room;
28 - storage batteries; 29 - trunk; 30 - instruments room;
31 - annunciator system; 32 - chart room

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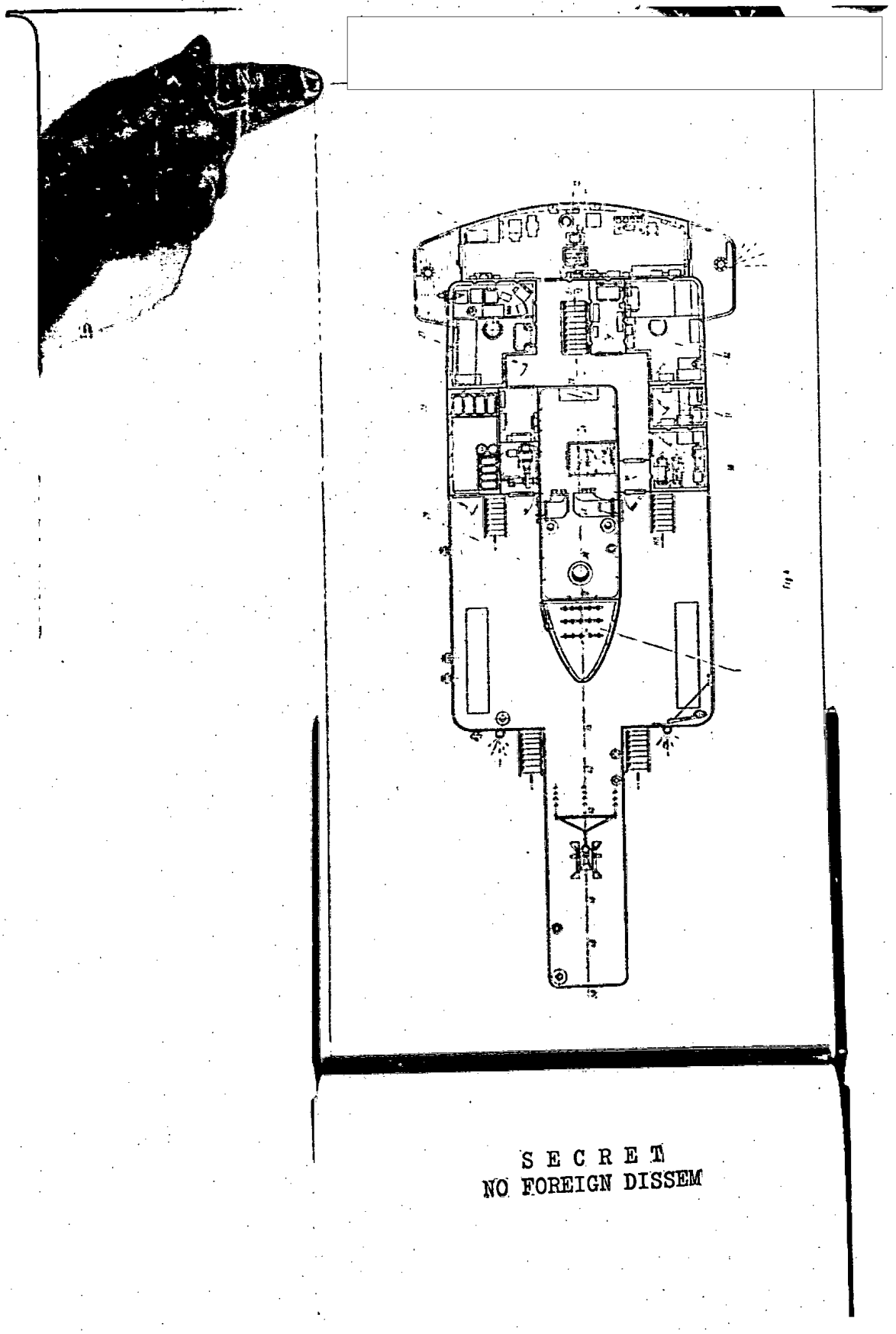

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FIG.5. Upper Deck:

1 - electrical and mechanical workshop; 19 - paint locker; 33 - living quarters; 34 - intermediate store; 35 - conveyers; 36 - chemical fire extinguishing plant room; 37 - ammonia and freon store room; 38 - quick freeze plant; 39 - gyro-compass flat; 40 - heads

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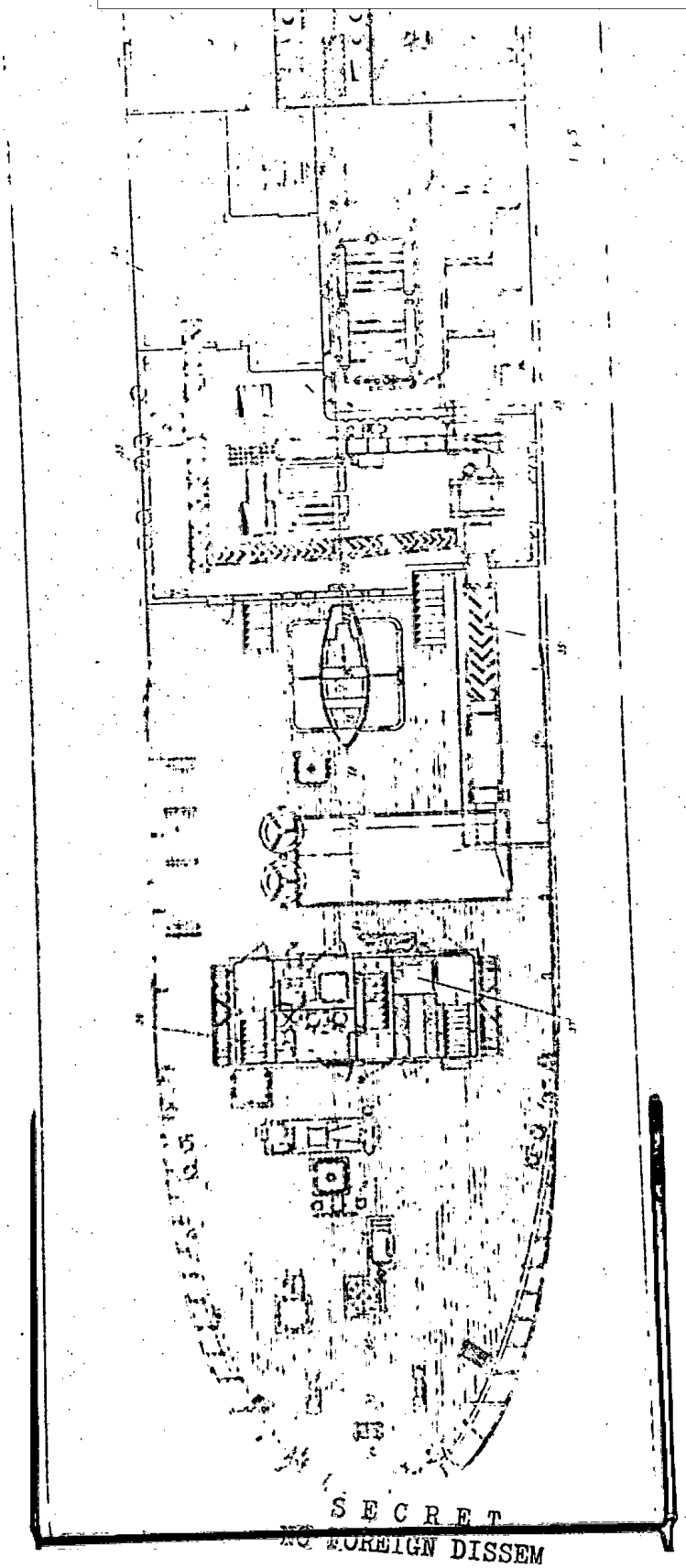

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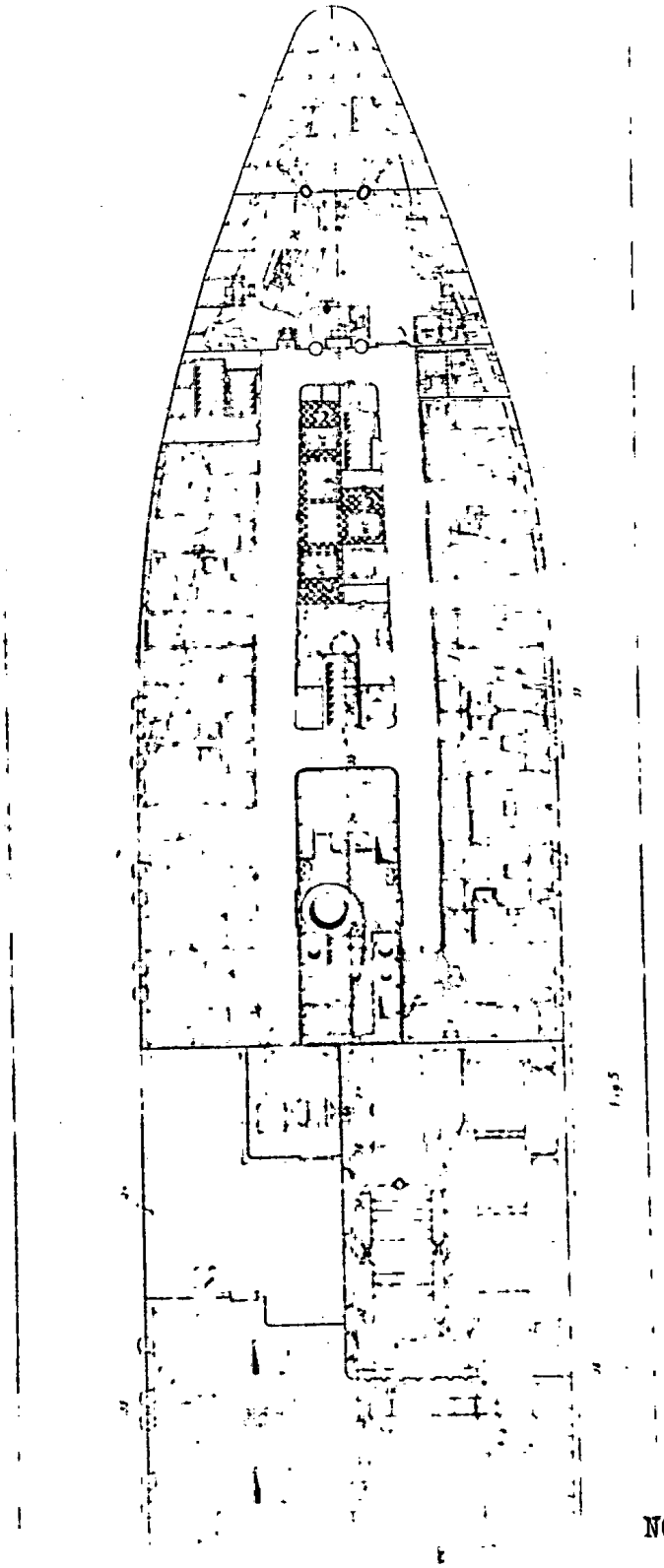

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FIG. 6 Fore Platform:

16 - chain locker; 41 - dirty laundry locker;
42 - laundry; 43 - clean laundry locker; 44 - bath

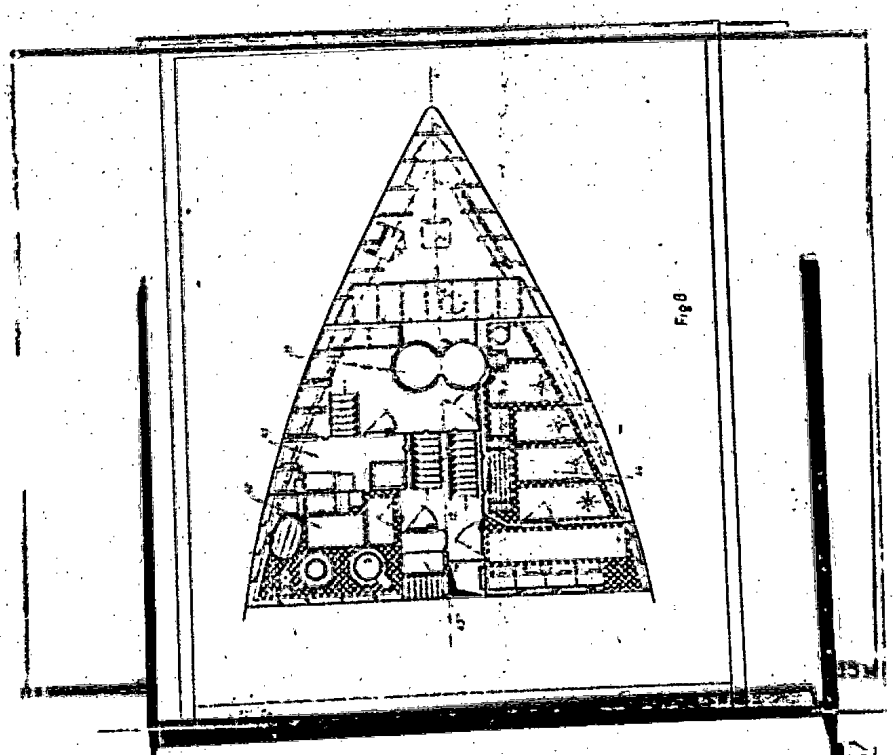

Fig 8

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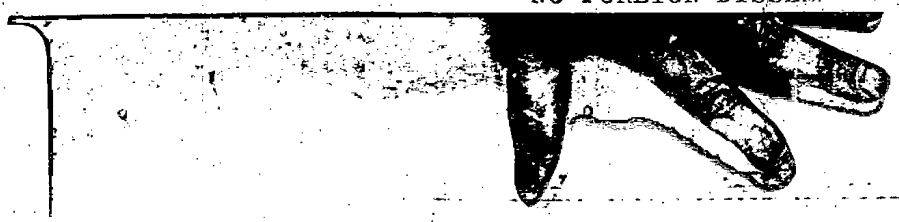

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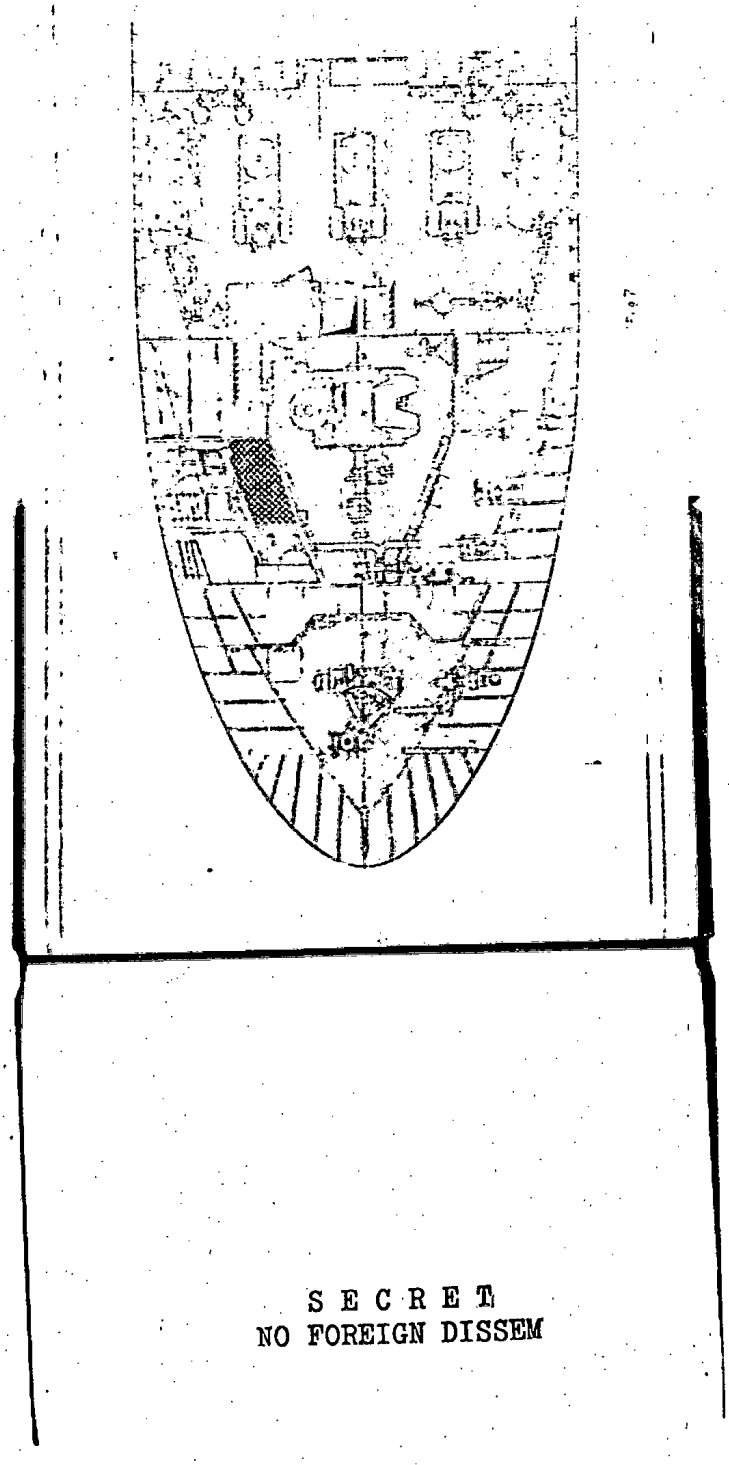

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FIG.8 Interior:

9 - propelling motor flat; 11 - fresh water; 13 - hold; 14 - engine and boiler room; 15 - log and echo depth soundor room; 17 - fore peak; 50 - fecal tank; 51 - water plant; 52 - trunk; 53 - boiler feed water; 54 - mechanical equipment store room; 55 - electrical equipment store-room; 56 - after peak

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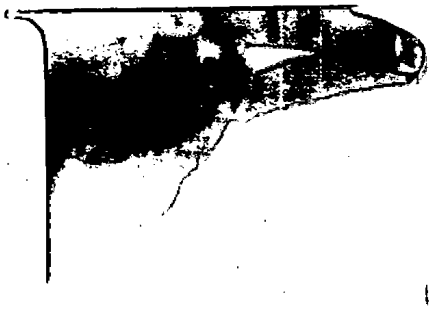

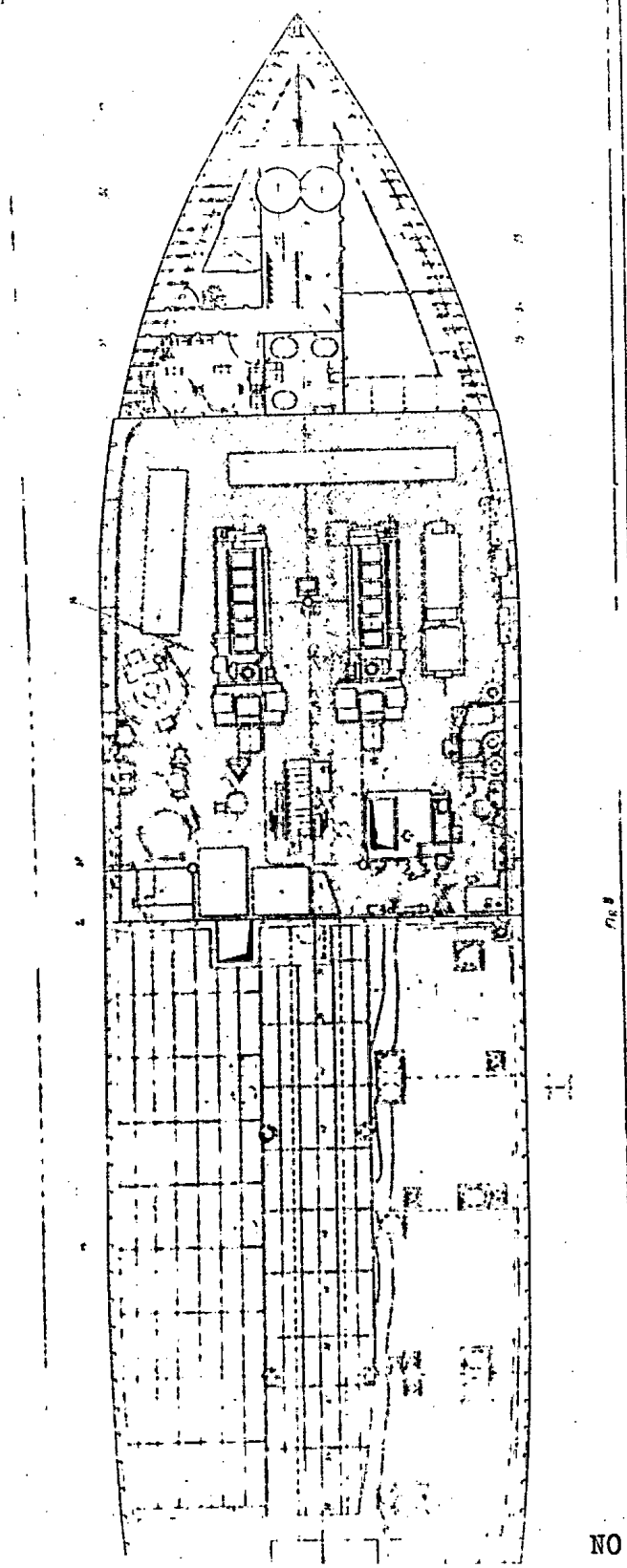

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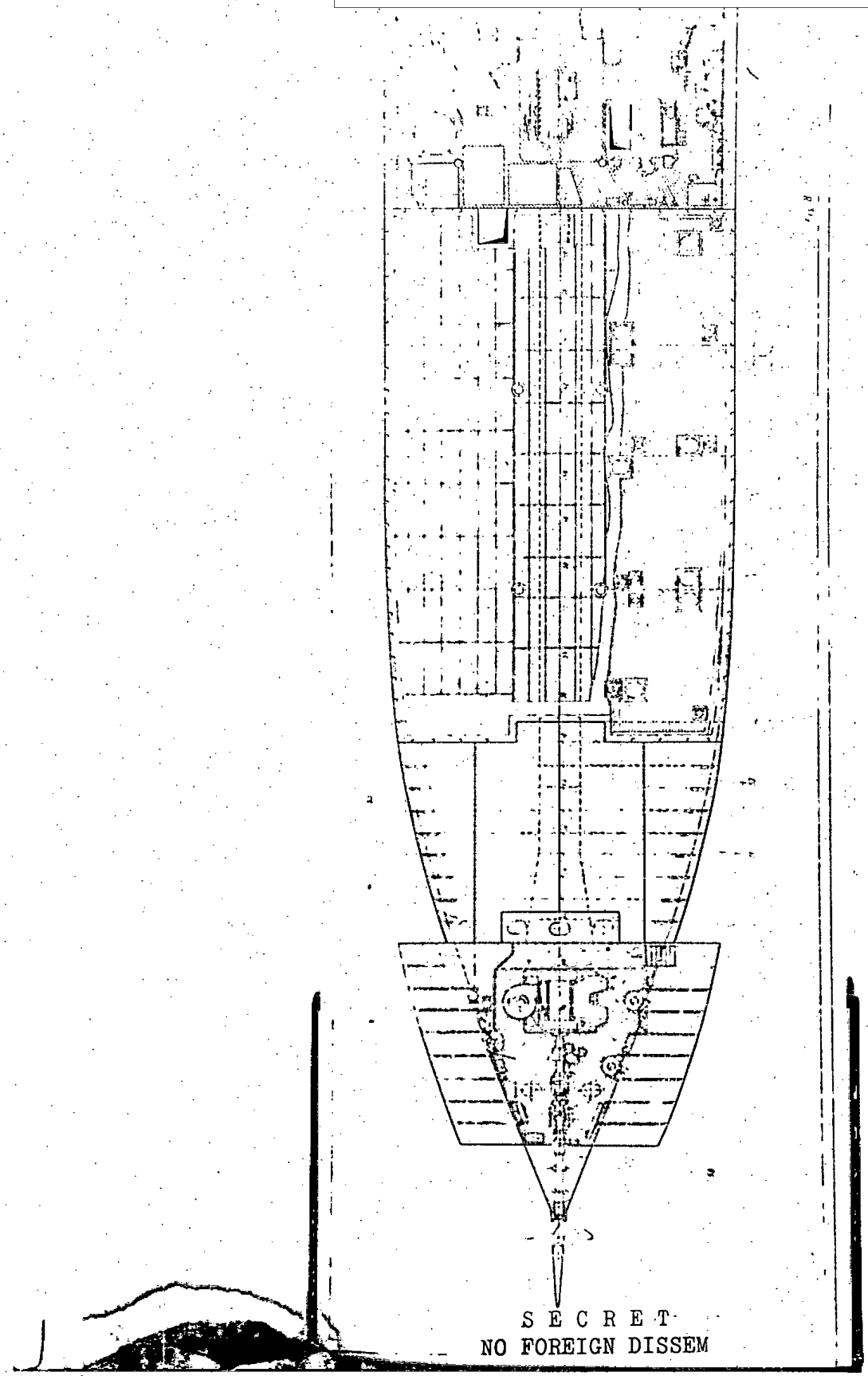

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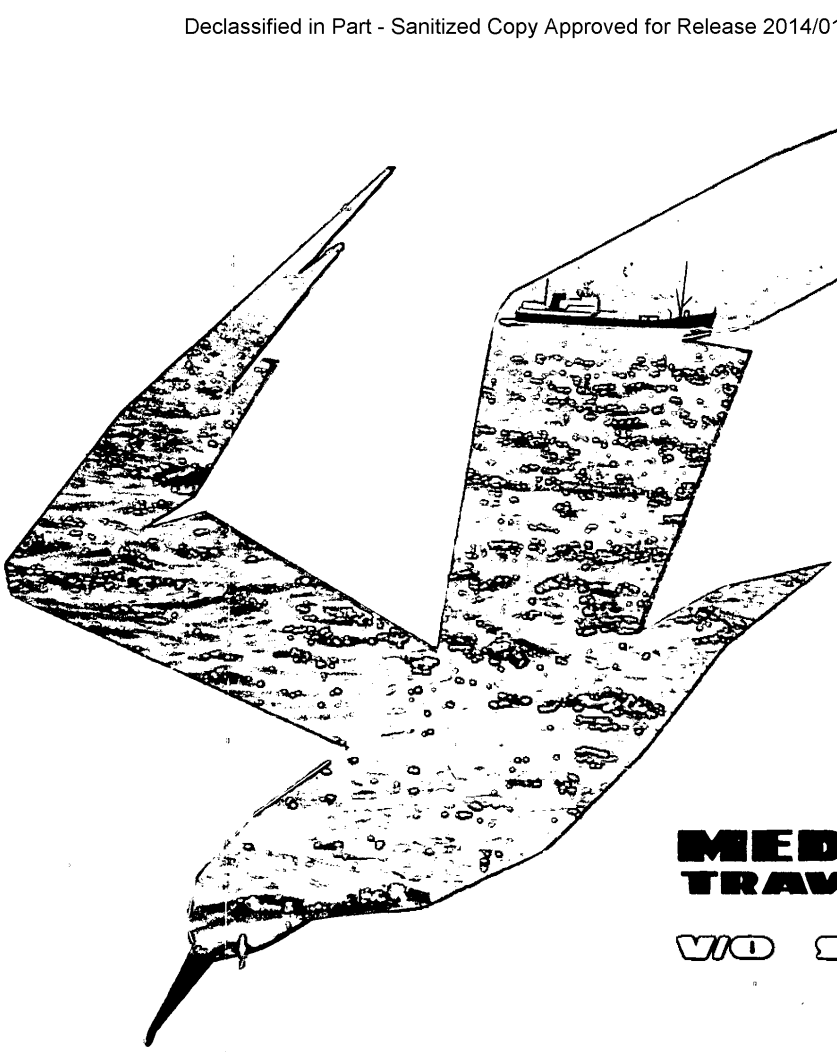


MEDIUM FISHING TRAWLER SRTM-502

V/O SUDOIMPORT

Declassified in Part - Sanitized Copy Approved for Release 2014/01/15 : CIA-RDP80-00247A002000500001-2

Мы предлагаем Вашему вниманию краткое описание нового типа среднего рыболовного траулера СРТМ-502, важнейшей отличительной особенностью которого является возможность обработки улова на борту и выработки высококачественной продукции. Относительно мощная рефрижераторная установка на судне обеспечивает заморозку улова и доставку продукции в порт в рефрижераторных трюмах. Эти ценные качества траулера, выгодно отличающие его от всех других подобных траулеров, позволяют вести автономный промысел в открытом море на большом удалении от порта.

Технологическое оборудование траулера обеспечивает приготовление малосоленой продукции в бочках и в жестяной таре, разделку донных пород рыб и заморозку ее в блоки. Обработка рыбы механизирована. При обработке улова применяются высокопроизводительные оригинальные технологические машины, в частности моечно-циркуляционная и машина для укладки сельдяных пород рыб в бочки.

Для выборки и постановки трала и дрифтерных сетей применено совершенное и удобное в эксплуатации оборудование, предусмотрены многочисленные приспособления, повышающие производительность труда рабочих и облегчающие труд.

Судно спроектировано с учетом большого опыта работы тралового флота в СССР. Высокие мореходные качества траулера позволяют использовать его в тяжелых условиях Северной Атлантики и морей Дальнего Востока и, безусловно, будут отвечать требованиям эксплуатации в других морских районах. Во всех эксплуатационных случаях нагрузки остойчивость траулера соответствует классификационным нормам без принятия жидкого балласта. Наличие больших цистерн в носу и корме облегчает удифферентовку судна при различных случаях нагрузки. Взаиморасположение помещений и технологического оборудования выполнено таким образом, что обеспечивает поточность операций, удобство обработки и транспортировки рыбы. Рыба поступает на заморозку с промысловой палубы самотеком. Морозильное отделение размещено между грузовыми трюмами, что позволяет передавать продукцию в рыбные трюмы кратчайшим путем — через клинкетные дверцы в поперечных переборках.

Двигатели судна надежны, экономичны, безотказны в работе и хорошо зарекомендовали себя в тяжелых промысловых условиях. Благодаря применению винта регулируемого шага созданы наилуч-

This is a short description of a new type of medium fishing trawler CPTM-502, the main feature of which is processing of fish into products of high quality on board the trawler. The products are frozen and delivered to port in the holds refrigerated by a powerful installation. Unlike other ships of the type, these features allow independent fishing on high seas.

The trawler technological equipment is designed to make freshsalted products in barrels and iron packing, to cut deep water fish and to block-freeze it. The processing of fish is mechanized. Original, highly productive technological equipment (machines), such as the washing-circulating machine and the machine for packing herrings into barrels, is furnished.

Up-to-date, easy-to-handle equipment and numerous devices which increase labour productivity are used to heave and set the trawl and the drift-nets.

The vast experience of the Soviet trawling fleet has been used in designing the trawler. Her good seaworthiness can withstand the difficult nautical conditions of the Northern Atlantic and the seas of the Far East, to say nothing of other areas. During all operations her stability conforms to the classification standards without taking water ballast. The big tanks in the fore and aft of the trawler facilitate her trimming with different loads aboard. The location of the premises and equipment ensures conveyor-line production, convenient processing and transportation of fish. From the deck the fish descends by gravity to the refrigerators located between the holds, where it goes through sliding doors in the transverse partitions.

The reliable and efficient engines can withstand the sternest tests in marine use. The screw with variable pitch creates the most favourable

шие условия для выборки дрифтерных сетей. Унификация сортов топлива для главного и вспомогательных двигателей и для котла значительно упростила систему топливных трубопроводов и облегчила их эксплуатацию.

У команды судна хорошие бытовые условия: жилые помещения расположены только в надстройке и имеют естественное освещение и искусственную вентиляцию. Все каюты двухместные.

КРАТКОЕ ОПИСАНИЕ ТРАУЛЕРА

Тип судна — стальное, самоходное, нормальных образований, однопалубное, с развитой кормовой надстройкой и утопленным полубаком. Траулер строится по правилам, нормам и под наблюдением Морского Регистра СССР на класс Л* Р $\frac{4}{1}$ С.

Длина наибольшая, *м*	54,2
Ширина наибольшая, *м*	9,3
Высота борта на миделе, по верхнюю палубу, *м*	4,7
Водоизмещение в полном грузу, при выходе на промысел, *т*	905
Осадка средняя при полном водоизмещении, *м*	3,7
Дедвейт, *т*	305
Регистровая вместимость валовая, *рег. т*	631
Емкость грузовых трюмов (нетто), *м*³	355
Грузовместимость (по мороженой рыбе в таре), *т*	177
Скорость полного хода в грузу, узлы около	12

Автономность плавания по запасам топлива, при работе главного двигателя полной мощностью и работе необходимых вспомогательных механизмов — 30 суток.

Дальность плавания по запасам топлива и смазки — свыше 8500 миль.

Судно непотопляемо при затоплении одного любого отсека, а также при групповом затоплении носового рыбного трюма и морозильного отделения и кормового рыбного трюма.

conditions for heaving the drift-nets. One-type fuel for the main and auxiliary engines and for the boiler considerably simplifies the system of fuel pipes and makes their use easier.

The living compartments located in the superstructure have natural illumination and artificial ventilation. All cabins are for two.

BRIEF DESCRIPTION OF THE TRAWLER

Type. The trawler is a steel, self-propelled, normal, single-deck vessel, with a developed superstructure and low forecastle. It is manufactured under the control and in compliance with the rules and standards of the USSR Register of Shipping (class Л* Р $\frac{4}{1}$ С).

Maximum length, *m*	54.2
Maximum breadth, *m*	9.3
Midship height of board up to upper deck, *m*	4.7
Displacement at full load when departing for operation, *t*	905
Mean draught at full displacement, *m*	3.7
Deadweight, *t*	305
Registered gross capacity, *reg. t*	631
Capacity of cargo holds (netto), *cu. m*	355
Load-carrying capacity (frozen fish in packing), *t*	177
Full speed with load, knots	about 12

Self-sustained sailing, according to the supply of fuel, with the main engine and all necessary auxiliary mechanisms working at full capacity, is 30 days.

Cruising range, according to the fuel and lubrication stocks is 8,500 miles.

The ship will not sink if either of her compartments is flooded, or if the fore fish hold, the refrigerator and the aft fish hold are flooded at once.

Корпус судна выполнен сварным, по поперечной системе набора. Рубки на палубе надстройки и юта выполнены из алюминиево-магниевого сплава. Форштевень и ахтерштевень — сварные. Настил второго дна тянется практически по всей длине судна, высота второго дна — от 1100 до 1450 *мм*.

Общее расположение судна обеспечивает удобную постановку и выборку дрифтерных сетей и трала, а также работу с промысловыми механизмами, прием и обработку улова, наиболее благоприятное размещение экипажа судна. Удобны и комфортабельны двухкомнатная каюта капитана, две одноместные каюты командного состава, двухместные каюты остального экипажа. В каждой из них установлены умывальники с подводом горячей и холодной воды. Жилые помещения теплоизолированы. Открытая часть главной палубы имеет деревянный чаковый настил, палуба полубака покрыта нескользящей мастикой. Все основное камбузное оборудование электрифицировано. В электроплите имеется духовка для выпечки хлеба. Предусмотрена механическая прачечная с электрической стиральной машиной и другим оборудованием.

Судовые устройства траулера выполнены в соответствии с требованиями Морского Регистра СССР и оснащены современными конструкциями и механизмами. Подъем становых якорей производится электроручным брашпилем с приводом от двухскоростного электродвигателя. Рулевая машина — электроручная, приспособленная для работы с авторулевым, автоматически удерживающим судно на заданном курсе. В рулевой рубке имеется ручной привод к рулю с валиковой передачей; переход от электрического управления к ручному запасному осуществляется без всяких переключений. В качестве спасательных средств предусмотрены две спасательные шлюпки на 16 человек каждая, два спасательных плота тяжелого типа на 6 человек каждый и легкий спасательный плотик. Подъем и спуск шлюпок производится склоняющимися шлюпбалками с электроручными лебедками. Для выполнения грузовых и промысловых операций на судне установлены:

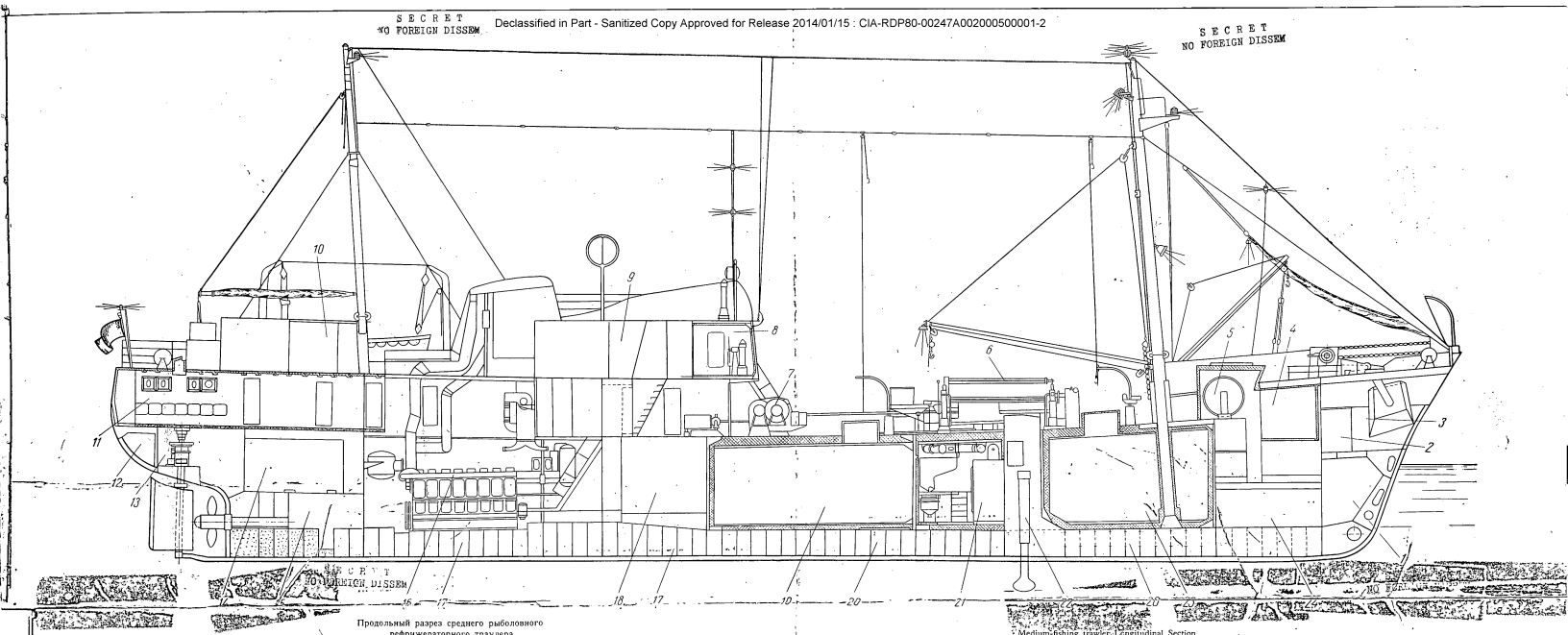
- две грузовые стрелы на фок-мачте, грузоподъемностью 2 и 1,5 *т*, для погрузки и выгрузки промыслового снаряжения из сетевого трюма; грузовая стрела грузоподъемностью 2 *т* обслуживается своей лебедкой, а грузовая стрела грузоподъемностью 1,5 *т* — турачками брашпиля или дрифтерным шпилем;

The trawler's hull is welded with transverse framing. The deckhouse on the superstructure and poop-deck are made of aluminium-magnezium alloy. The stem and the sternpost are welded. The decking of the second bottom runs along the whole length of the vessel. The height of the second bottom is 1,100—1,450 *mm*.

The general layout of the trawler allows convenient setting and heaving in the trawl, as well as handling the fishing mechanisms and receiving and processing of the catch. The cabins of the crew are conveniently situated. The captain's two-room cabin, the two single-bunk officers' cabins and the two-bunk cabins of the crew are also very comfortable. Each of them has hot and cold running water and is heat-insulated. The open part of the main deck has a chock wooden floor, the forecastle deck is treated with a non-slip mastic. The galley equipment works on electricity. The electric range has an oven for baking bread. A mechanical laundry with an electric washing machine and other equipment is furnished.

The installations of the trawler conform to the requirements of the USSR Register of Shipping and are equipped with up-to-date structures and mechanisms. The main anchors are hoisted by a hand or electric-powered windlass driven by a two-speed electric motor. Steering is hand- or electric-powered and is adapted for automatic steering, which automatically holds the vessel on a set course. In the steering room there is a hand drive to the steering wheel with a shaft line; transition from power steering to emergency hand steering does not require any shifting. For emergencies the ship is provided with life boats for 16 persons each, two life rafts of heavy type for 6 persons each, and a light life raft. The life boats are raised and lowered by means of declinable davits with hand or electric-powered winches. For loading and fishing operations the vessel is provided with:

- two jibs in the foremast, with a lifting capacity of 2 and 1.5 *t*, for lowering and bringing up fishing equipment from the net hold; the 2-*t* jib is powered by its own winch, while the 1.5-*t* jib is operated by the drums of the windlass or the drift capstan;

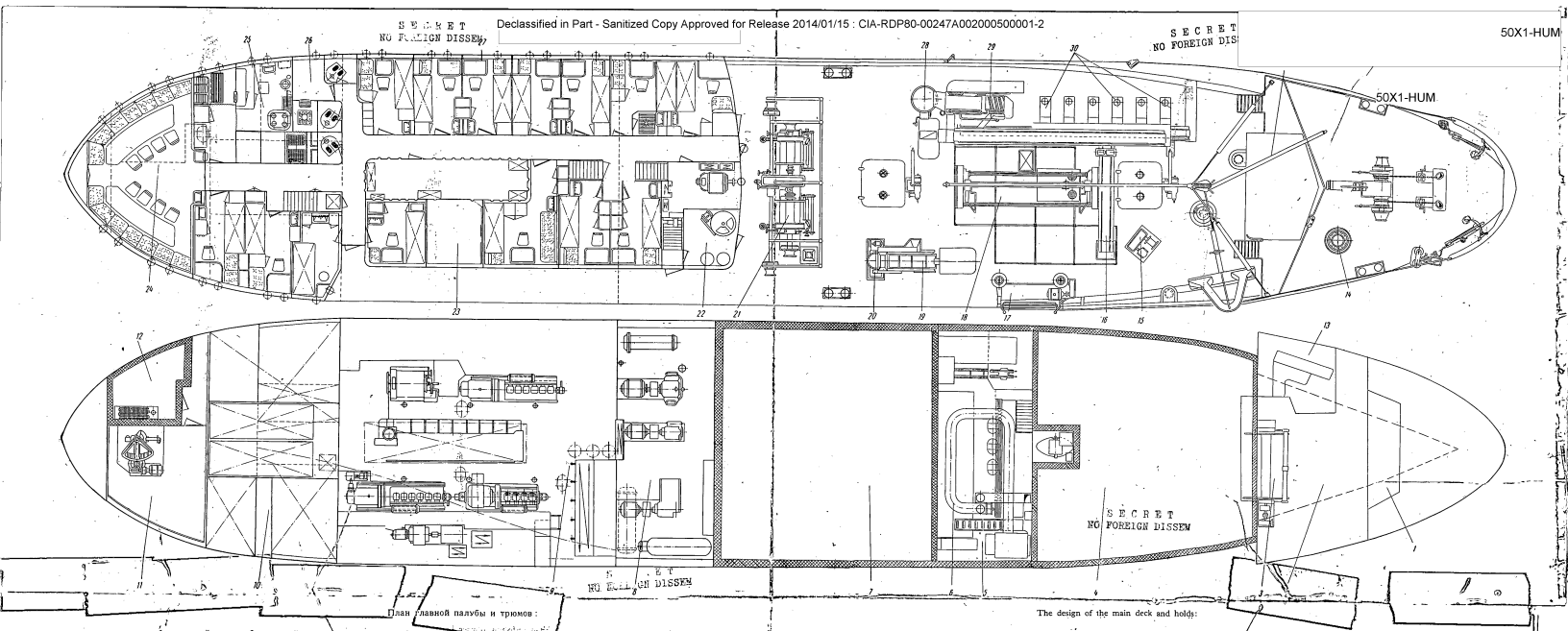


Продольный разрез среднего рыболовного рефрижераторного траулера

1 — мытьевая и котельная вода ; *2* — цепной ящик ; *3* — фориик-малярная ; *4* — сетной трюм ; *5* — вьюшка для укладки вожака ; *6* — сететрясная машина ; *7* — траловая лебедка ; *8* — рулевая рубка ; *9* — агрегатная ; *10* — прачечная ; *11* — салон-столовая ; *12* — мытьевая и котельная вода ; *13* — румпельное отделение ; *14* — питьевая вода ; *15* — коридор гребного вала ; *16* — машинное отделение ; *17* — топливо ; *18* — рефрижераторное машинное отделение ; *19* — кормовой рыбный трюм ; *20* — коридор для прокладки трубопроводов ; *21* — морозильное отделение ; *22* — шахта рыбопоискового прибора ; *23* — носовой рыбный трюм ; *24* — мытьевая и котельная вода

Medium-fishing trawler. Longitudinal Section

1 — washing and boiler water; *2* — chain box; *3* — painting shop of a fore-peak; *4* — net hold; *5* — guide rope reel; *6* — net shaking machine; *7* — trawl winch; *8* — wheel house; *9* — generator-room; *10* — laundry; *11* — saloon and dining-room; *12* — washing and boiler water; *13* — tiller compartment; *14* — drinking water; *15* — propeller shaft tunnel; *16* — machine compartment; *17* — fuel; *18* — refrigerating machine compartment; *19* — aft fish hold; *20* — pipe-tunnel; *21* — refrigerating compartment; *22* — fish finder trunkway; *23* — fore fish hold; *24* — washing and boiler water



План главной палубы и трюмов :

1 — цепной ящик ; *2* — сетной трюм ; *3* — машина для укладки вожака ; *4* — носовой рыбный трюм ; *5* — морозильное отделение ; *6* — моечно-охлаждающая установка ; *7* — кормовой рыбный трюм ; *8* — рефрижераторное машинное отделение ; *9* — моторное отделение ; *10* — отсек топливной и питьевой воды ; *11* — румпельное отделение ; *12* — продовольственная рефрижераторная кладовая ; *13* — консервное отделение ; *14* — дрифтерный шпиль ; *15* — грузовая лебедка ; *16* — транспортер наклонный сетевыборочный ; *17* — сетевыборочная машина ; *18* — сететрясная машина ; *19* — рыбопосольная машина ; *20* — машина для укладки рыбы в бочки ; *21* — траловая лебедка ; *22* — льдогенераторное отделение ; *23* — механическая мастерская ; *24* — салон-столовая ; *25* — камбуз ; *26* — прачечная ; *27* — каюты команды ; *28* — моечная машина ; *29* — головоотсекающая машина ; *30* — столы для разделки рыбы ; *31* — спасательный плот

The design of the main deck and holds:

1 — chain box; *2* — net hold; *3* — machine for packing the drif-net tail; *4* — fore fish hold; *5* — refrigerating compartment; *6* — washing and cooling installation; *7* — aft fish hold; *8* — refrigerating machine compartment; *9* — machine compartment; *10* — fuel and drinking water section; *11* — tiller compartment; *12* — food refrigerating hold; *13* — canning section; *14* — drift-net capstan; *15* — loading winch; *16* — inclined scraper conveyer; *17* — net heaving-in machine; *18* — net shaking machine; *19* — fish salting machine; *20* — machine for packing fish into barrels; *21* — trawl winch; *22* — ice generator section; *23* — mechanical shop; *24* — saloon and dining-room; *25* — galley; *26* — laundry; *27* — crew cabins; *28* — washing machine; *29* — head cutting machine; *30* — tables for processing fish; *31* — life raft

- две грузовые стрелы на передней и боковых стенках рубки грузоподъемностью по 1,5 *т*, промыслового назначения, обслуживаемые траловой лебедкой ;
- грузовые кранбалки у комингсов люков, грузоподъемностью по 0,25 *т*, с электролебедками на кранбалках.

Для работы с тралом на фок-мачте имеются два блока со шкентелями грузоподъемностью 4 *т*, обслуживаемые турачками траловой лебедки. Для просушки сетей и небольших грузовых операций на штаг-карнаке установлены два блока для шкентелей с гаками грузоподъемностью по 0,5 *т*.

Машинная установка. Силовая установка судна — дизель четырехтактный восьмицилиндровый, бескомпрессорный, реверсивный с газотурбинным наддувом.

Мощность дизеля, *л. с.*	800
Число оборотов, *об/мин*	300
Диаметр цилиндров, *мм*	320
Ход поршня, *мм*	480
Удельный расход топлива, *г/э. л. с. ч.*	168
Удельный расход смазочного масла, *кг/час* около	2

Пуск и реверс двигателя сжатым воздухом.

Смазка циркуляционная, под давлением. Система охлаждения замкнутая, пресной водой. Дизель работает на винт регулируемого шага с гидравлической системой изменения шага винта. Соединение двигателя с гребным валом — через эластичную муфту. Дистанционная система управления винтом — пневматическая следящая. Лопасти и корпус ступицы винта выполнены из нержавеющей стали и обработаны по высшему классу точности. Все общесудовые системы имеют электроприводные механизмы. Предусмотрено сепарирование топлива, масла и трюмных вод. Запасы пресной воды пополняются с помощью автоматизированной испарительной установки. В качестве противопожарных средств предусмотрена противопожарная водяная система и система паротушения в топливных цистернах. Для целей отопления, хозяйственных и технологических нужд установлен автоматизированный огнетрубный паровой котел. На судне имеется механическая мастерская для проведения судовых ремонтных работ с токарным и сверлильным станками, электроточилом и другим оборудованием.

- two 1.5-*t* jibs on the fore and side walls of the deckhouse, to be used during fishing, they are powered by the drums of the trawl winch;
- derricks at the coamings, with a weight lifting capacity of 0.25 *t*, with electric winches on the derricks.

The two blocks with derricks in the foremast are intended for operating the trawl, have a lifting capacity of 4 *t* and are powered by the drums of the trawl winch. Two blocks are mounted on the quarter deck stay with suspended hooks, 0.5 *t* capacity for drying and small loading oparations.

Engine. Ship propulsion diesel is four-stroke, eight-cylinder, non-compressor type, direct reversing with supercharged gas turbine.

Engine power, *H. P.*	800
Revolutions, *r. p. m.*	300
Diameter of cylinders, *mm*	320
Stroke, *mm*	480
Specific fuel consumption, *g/e. h. p. hr*	168
Specific lubricating oil consumption, *kg/hr*	about 2

The engine is started and reversed by compressed air. The lubrication is circulating, forced. The fresh-water cooling system is closed. The engine drives a propeller of an adjustable pitch with a hydraulic system of changing the pitch. Through an elastic coupling the engine is connected to the propeller drive shaft. The distance control of the propeller is the pneumatic tracker system.

The propeller blades and boss are of stainless steel, and are finished. All the ship systems have electrically powered mechanisms. The fuel, oil and hold waters are separated. The supply of fresh water is replenished with the aid of an automatic evaporating installation. A water fire smothering system is provided and fuel tanks are fitted out with a steam fire smothering system. For heating, general and technological needs an automatic steam boiler is installed. The vessel has a mechanical shop for repair work with turning and drilling machine tools, an electric grindstone and other equipment.

Чтобы упростить и облегчить эксплуатацию электрооборудования, на судне применен переменный ток, напряжением 220 *в*.

Судовая электростанция имеет установочную мощность 263 *квт* и состоит из двух дизельгенераторов мощностью по 100 *квт* и одного дизельгенератора мощностью 63 *квт*. Генераторы напряжением 230 *в*, 750 *об/мин*, с самовозбуждением и стабилизаторами напряжения, встроенными в корпус генераторов. При стоянке судна у стенки возможно получение питания с берега или от другого судна через станцию питания с берега мощностью 30 *квт*. В качестве приводных двигателей для генераторов установлены дизели — вертикальные четырехтактные бескомпрессорные, простого действия, нереверсивные, шестицилиндровые, мощностью 150 *л. с.* и четырехцилиндровые мощностью 100 *л. с.*; дизели, однотипные с главным двигателем, работают на том же топливе и смазке и имеют аналогичные топливные системы и системы смазки и охлаждения, что создает определенные эксплуатационные удобства.

Схемой главного распределительного щита предусмотрена как параллельная, так и раздельная работа генераторов.

Электроэнергия распределяется по фидерной системе. Канализация силовой и осветительной сети выполнена негорючим наиритовым кабелем.

Внутрисудовая связь обеспечивается автоматической телефонной станцией и системой аварийной сигнализации. Для передачи по судну команд и широкого радиовещания имеется командно-вещательная станция.

При работе в ночное время освещение рабочих мест и забортного пространства производится мощными осветительными люстрами, установленными на фок-мачте, бизань-мачте, на палубе юта, на передней стенке рубки и на ноке грузовой стрелы.

Навигационно-штурманское оборудование судна состоит из малогабаритной навигационной радиолокационной станции, радиопеленгатора, гирокомпаса, лага и прибора опасной глубины, установленного для повышения безопасности судовождения на ограниченных глубинах.

Рыбопоисковые приборы. Для повышения эффективности промысла на траулере установлены рыбопоисковые приборы, позволяющие вести поиск косяков рыбы как в вертикальном, так и в горизонтальном направлении. Рыбопоисковый прибор вертикального действия „Дельфин" дает возможность обнаруживать косяки рыбы на глубинах

For simple and easy operation of electrical equipment the vessel uses 220 *V* A. C.

The trawler's power station has an adjustable capacity of 263 *kW* and consists of two 100 *kW* diesel-generators and a 63 *kW* diesel-generator. The 230 *V*, 750 *r. p. m.* generators are self-excited with power stabilizers, built into the body of the generators.

When the vessel is docked it is possible to receive power from the shore or from another ship through a shore power supply station of 30 *kW* capacity. Diesel prime-movers drive the generators; they are vertical, four-stroke, non-compression, simple action, non-reversible, six-cylinder, of 150 *H. P.* and four-cylinder of 100 *H. P.*; the diesels are of the same type as the prime-mover, they work on the same fuel and lubrication and have similar fuel and lubricating systems, which has certain advantages in operation.

The main distribution switchboard is designed for parallel and separate work of the generators.

The power is distributed through a feeding system. The power and lighting network are of fire-proof nairit cable.

Intercommunications. For intercommunication there is an automatic telephone station and an emergency signal system. There is a crew broadcasting station for commands and general broadcasting.

At night the places where work is carried out and the space beyond the ship are illuminated by powerful flood lights set up at the formast, the mizzen-mast, the poop-deck, the front wall of the deckhouse and the derrick head.

Navigational equipment. The trawler has a small navigational radar station, a radio direction finder, a gyro-compass, a log arrangement and device for measuring depths, installed for safety during navigation in shallow waters.

Fish-finding devices. For improved efficiency in fishing the trawler is equipped with fish-finding devices, which track fish shoals both in the

до 2400 *м* при работе на самописец и на глубинах до 600 *м* — при работе на электронный отметчик.

Рыбопоисковая станция вертикально-горизонтального действия „Палтус" обеспечивает поиск косяков рыбы как в горизонтальном, так и вертикальном направлениях. В горизонтальном направлении станция позволяет вести поиск в секторе 150° с каждого борта; после обнаружения косяка рыбы дальнейшее наблюдение за ним ведется направленным лучом. Станция работает с основным диапазоном измерения до 2400 *м*; показания станции даются на самописец. Самописцы и индикатор поисковых приборов установлены в рулевой рубке.

Судно оборудовано следующими средствами радиосвязи:

- радиопередатчиком средних волн для навигационной, эксплуатационной и аварийной радиосвязи;
- радиопередатчиком аварийным — для обеспечения радиосвязью при выходе из строя главного передатчика или обесточивания сети;
- автоматическим податчиком и автоматическим приемником сигналов тревоги и бедствия;
- двумя всеволновыми приемниками;
- аварийным приемником средних волн;
- рейдовой радиостанцией с четырьмя жестко фиксированными волнами для телефонной связи на коротких волнах между судами или с берегом;
- шлюпочной переносной радиостанцией.

Рефрижераторная установка. Рефрижераторная установка траулера — аммиачная, компрессионная — состоит из двух двухступенчатых компрессоров, холодопроизводительностью по 37500 *ккал/час* при температуре кипения минус 40°С и температуре конденсации плюс 35°С. Холодильная установка обеспечивает одновременную работу морозильных аппаратов, моечно-циркуляционной охлаждающей установки, льдогенератора и поддержание температуры в трюмах в двух режимах: минус 6°С — при охлаждении и минус 18°С — при замораживании. Предусмотренная в рефрижераторной уста-

vertical and horizontal directions. The "Delfin" vertical fishing device makes it possible to track shoals of fish to a depth of 2400 *m* with the aid of a recorder and up to 600 *m* with the aid of an electronic marker. The "Paltus" fishing horizontal and vertical device tracks fish both in the horizontal and vertical directions. Its horizontal tracking range is 150° from the port and starboard sides; after the shoal of fish is discovered observation is carried out by a directed beam. The range of the device is up to 2,400 *m*; the results are written down by the recording instrument. The recorder and indicator of the tracking devices are installed in the wheelhouse.

Radio communication equipment:

- medium-wave radio transmitter for navigational, operational and emergency radio communication;
- emergency radio transmitter for radio communication in case the main transmitter goes out of order or power failure;
- automatic transmitting and receiving radio-set for alarm and disaster signals;
- two all-band receivers;
- a medium-wave emergency receiver;
- a road radio installation with four permanent waves for short distance short-wave ship-to-ship and ship-to-shore telephone communication;
- a mobile radio station for small boats.

Refrigerating plant. The compression ammoniac refrigerating system consists of two double-stage compressors, with a cooling output of 37,500 large calories per hour under a boiling temperature of minus 40°C and a condensation point of plus 35°C. The cooling installation can operate simultaneously the freezing apparatuses, the washing-circulating cooling installation, the ice generator and maintaining the temperature in the holds at two regimes of temperature: minus 6°C during cooling and minus 18°C during freezing. The automatic protection and regulation, the distance and on the spot control of temperature, pressure and levels,

новке защитная и регулирующая автоматика, дистанционный и местный контроль температуры, давления и уровней, световая и звуковая создают надежность и безопасность в работе, а также удобство в эксплуатации установки. Провизионные кладовые охлаждаются автономной автоматической холодильной установкой холодопроизводительностью 1500 *ккал/час*.

Промысловое и технологическое оборудование. На судне принята однобортная схема траления правым бортом. Траловая лебедка — электрическая, с тяговым усилием 6 *т*, при средней скорости выбирания ваеров — 60 *м/мин*. Электропривод траловой лебедки выполнен по системе двигатель-генератор; исполнительный двигатель траловой лебедки постоянного тока, мощностью 90 *квт*. Лебедка имеет два ваерных барабана канатоемкостью по 1200 *м*, ваера диаметром 22 *мм* и четыре турачки для промысловых и грузовых операций. Правильная укладка ваера на барабаны лебедки обеспечивается автоматическими тросоукладчиками. Установлены счетчики длины вытравленных ваеров. Пуск и управление траловой лебедкой предусмотрены с рабочего места у лебедки и из рулевой рубки.

Процессы выборки дрифтерных сетей и вытряхивания из них рыбы механизированы. Выборка вожака дрифтерных сетей производится установленным на палубе полубака реверсивным дрифтерным шпилем с тяговым усилием 1,2 *т* при длительной нагрузке и 2 *т* — при кратковременной. Скорость выборки вожака — до 32 *м/мин*. Предусмотрено устройство, предохраняющее стояночный вожак от обрыва. Трудоемкая операция по укладке вожака в трюм осуществляется специальной машиной, состоящей из вьюшки и раскладочного устройства. Канатоемкость вьюшки — 3250 *м* ступенчатого вожака диаметром 40; 30 и 22 *м*; скорость намотки вожака:

на диаметре 1600 *мм* — 180 *м/мин*;
на диаметре 300 *мм* — 36 *м/мин*.

На правом борту промысловой палубы установлены сетевыборочная машина с двумя кулачковыми головками и сетевыборочный рол; чтобы устранить возможность повреждения рола при швартовке судна, рол откидывается внутрь судна на кронштейнах, закрепленных к тумбам сетевыборочной машины. Привод машины и рола осуществляется от одного электромотора. Наибольшее тяговое усилие одной

the light and sound signalization create reliability and safety in work, as well as convenience in operating the refrigerating plant. The food storerooms are cooled by an independent automatic cooling installation with a cooling output of 1,500 large calories per hour.

Fishing and technological equipment. The trawler is designed for one-sided starboard trawling. The electrically powered trawl winch has a 6-*t* towing force and heaves in the drift net cable at an average speed of 60 *m/min*. The power drive of the trawl winch is designed like a drive generator. The trawl winch has a driving motor of 90 *kW* A. C. The winch has two drift net cable drums which hold 1200 *m* of 22 *mm* diameter cable and four drums for fishing and loading operations. Automatic cable layers ensure the even winding of the cable on the drum of the winch. Meters are installed to check the length of cable let out. The trawl winch can be operated either from an operating place at the winch or from the wheelhouse. The heaving-in of the drift-net and the taking out of the fish from it are mechanised. The tails of the drift nets are heaved in by a reverse drift capstain mounted on the deck of the forecastle with a towing force of 1.2 *t* during prolonged towing and 2 *t* during short towing. The speed of heaving-in the tail is up to 32 *m/min*. An installation has been provided safeguarding the anchored tail from breaking off. The labour consuming process of storing the tail in the hold is realised by a special machine, consisting of a damper and a spreading-out device. The cable-holding capacity of the damper is 3,250 *m* of step tail, 40; 30 and 22 *m* in diameter, the speed of winding the tail is:

1,600 *mm* diameter — 180 *m/min*;
300 *mm* diameter — 36 *m/min*.

A net heaving-in machine with two cam heads and a net winding roller are installed on the starboard fishing deck; to prevent the roller from possible damage during mooring, the roller is drawn inside the trawler on angle brackets, fitted on to the pedestal of the net winding machine. The machine and roller are driven by a single electric motor. The maximum towing force on one cam head is 200 *kg*, the maximum speed of

кулачковой головки — 200 *кг*, наибольшая скорость выборки — 30 *м/мин*. Турачка для выборки верхних поводцов дрифтерного порядка имеет валиковый привод от сетевыборочного рола.

На главной палубе установлена сететрясная машина в диаметральной плоскости и состоит из двух вертикальных стоек с расположенными между ними приводными ролами и трясущим механизмом, длиной 3700 *мм*. Во избежание повреждений при швартовке траловая дуга выполнена заваливающейся.

Для обработки рыб сельдяных пород на траулере предусмотрены:

- моечно-циркуляционная охлаждающая установка, производительностью 3 *т/час*. В целях облегчения и ускорения работ загрузка рыбы в установку производится через горловину с верхней палубы;
- элеватор для выгрузки охлажденной сельди из охлаждающей установки в рыбопосольную машину;
- рыбопосольная машина, производительностью 4,5 *т/час*, установленная на главной палубе;
- машина для укладки сельди в бочки, производительностью 26 бочек в час, установленная на главной палубе.

Обработка придонных пород рыб производится транспортерами, головоотсекающей машиной, моечной машиной и другим съемным оборудованием, которое по мере необходимости может быть установлено на главной палубе.

Для выработки малосоленой сельди в жестяной таре-презервах в помещении полубака оборудовано консервное отделение.

Потребность в чешуйчатом льде для охлаждения тузлука при посоле сельди и для охлаждения придонных рыб, обеспечивается льдогенератором производительностью до 120 *кг* льда в час.

Заморозка рыбы производится в двух воздушных скороморозильных аппаратах шкафного типа до температуры в теле рыбы минус 18°С. Общая производительность морозильных аппаратов — 6 *т* рыбы в сутки. Морозильное отделение расположено в отдельном отсеке между носовым и кормовым рыбными трюмами; передача замороженной рыбы из морозильного отделения в трюмы производится через отверстия в поперечных переборках с клинкетными дверцами. Охлаждение трюмов принято воздушное как более эффективное;

heaving in is 30 *m/min*. The drum to heave in the upper reins of the drift net in order is shaft-driven from the net heaving-in roller.

On the main deck there is a diametrically level net shaking machine consisting of two vertical pillars and driving rollers between them and the shaking mechanism, 3700 *mm* long. To avoid damage during mooring the trawl arch is made to tip over.

To process herring sorts of fish the following is provided on the trawler:

- washing-circulating cooling installation, with a production capacity of 3 *t/hr*. To make easier and speed up the work the fish is loaded into the installation through a neck from upper deck;
- an elevator to take the cooled herring from the refrigerating plant to the salting machine;
- the fish salting machine with a capacity of 4.5 *t/hr* situated on the main deck;
- the machine which packs the herring into barrels, with capacity of 26 barrels an hour, situated on the main deck.

The processing of deep water sorts of fish is carried out by transporters, a head-cutting machine, washing machine and other cleaning equipment, which can be set up on the main deck, when necessary.

A canning department is equipped in the forecastle for the production of fresh salted herring in sheet metal containers.

The ice generator with an output capacity of up to 120 *kg* of ice per hour takes care of the demand for flake ice for cooling the salt brine during the salting of the herring and the deep water fish.

The fish are frozen in two cabinet-type quick air freezing apparatuses to a through freezing temperature of the fish reaching minus 18°C. The overall capacity of the freezing apparatuses is 6 *t* of fish a day. The refrigerating compartment is situated in a seperate section between the fore and aft fish holds; the frozen fish is transported from the cooling section to the holds via an opening in the transverse partitions with sliding doors.

50X1-HUM

оно также значительно легче по весу, чем рассольное, и требует меньших первоначальных затрат.

Судно укомплектовано всеми необходимыми в эксплуатации запасными частями, специальным инструментом и приспособлениями, а также всем необходимым аварийно-спасательным, навигационным и общесудовым снабжением.

Air cooling of the holds has been chosen as the most effective; it is also lighter than the brine and needs less primery expenditure.

50X1-HUM

The trawler is supplied with all the spare parts that will be necessary during operation, special tools and devices as well as the necessary emergency life-saving navigational and general vessel equipment.

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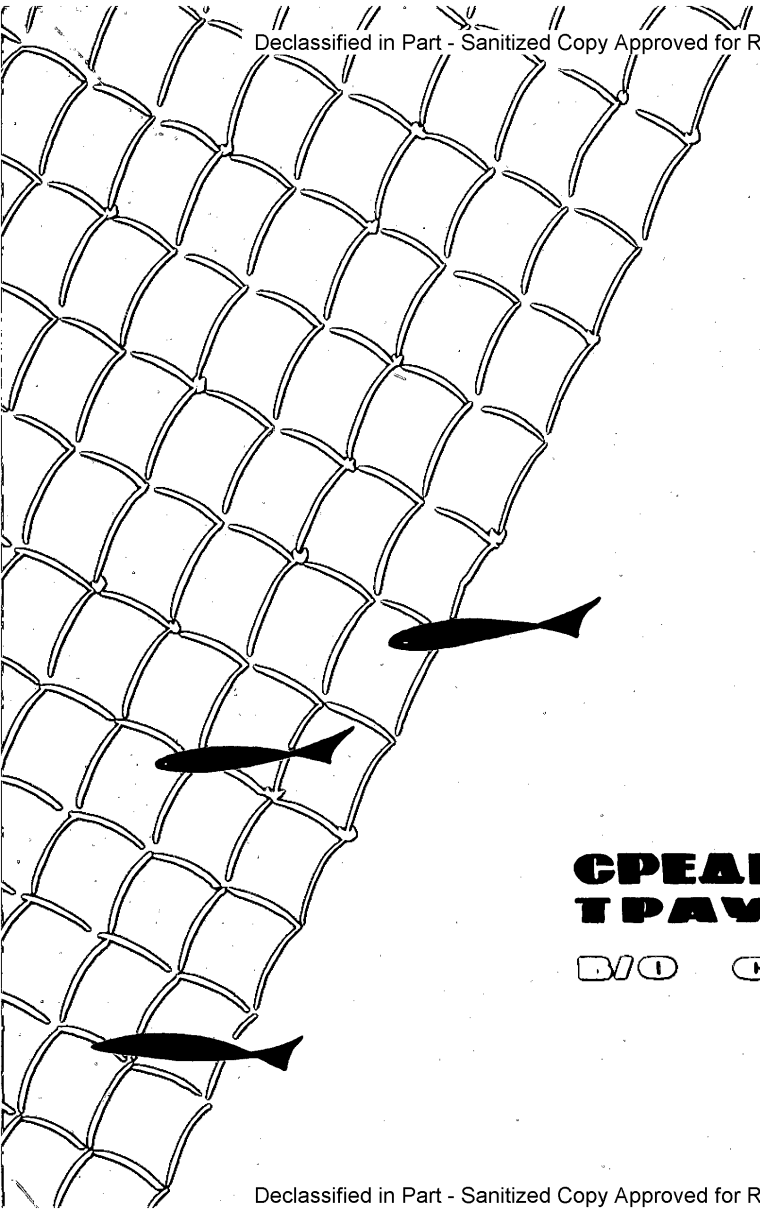


СРЕДНИЙ РЫБОЛОВНЫЙ ТРАУЛЕР СРТМ-502

В/О СУДОИМПОРТ

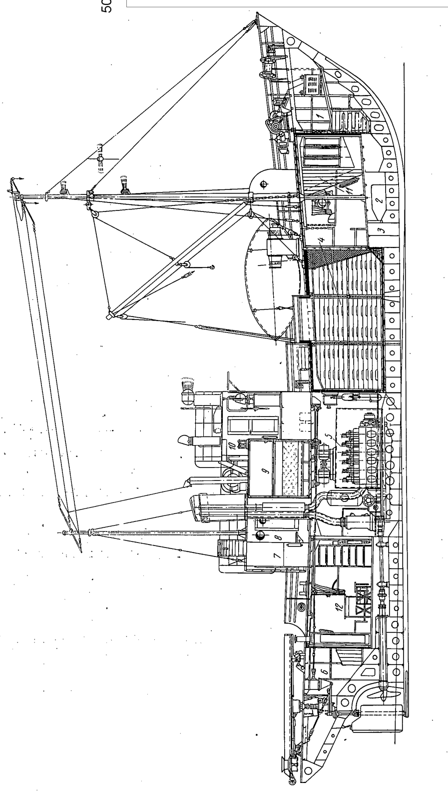


Рис. 2. Продольный разрез сейнера СЧС-150:
1-форпик; *2*-цистерна мытьевой воды; *3*-цистерна питьевой воды; *4*-рыбный трюм; *5*-моторное отделение; *6*-ахтерпик; *7*-сушильня; *8*-санузел; *9*-каюта капитана; *10*-рулевая рубка; *11*-носовое жилое помещение; *12*-кормовое жилое помещение

Fig. 2. Longitudinal section of Seiner СЧС-150:
1-fore peak; *2*-washing water tank; *3*-drinking water tank; *4*-fish fold; *5*-engine-room; *6*-after-peak; *7*-drying-room; *8*-sanitary-room; *9*-master's cabin; *10*-radio-room; *11*-fore living accommodation; *12*-living accommodation aft.

Пуск главного двигателя осуществляется сжатым воздухом или отработанными газами.

Управление главным двигателем выведено в рулевую рубку.

На Сейнере – две независимые сети распределения электроэнергии: общесудовая сеть постоянного тока напряжением 24 *в* и сеть силовых потребителей и наружного освещения постоянного тока напряжением 220 *в*.

Источником электроэнергии сети 220 *в* служит генератор мощностью 25 *квт*, напряжением 230 *в*, 1500 *об/мин*.

Сейнер имеет двухстороннюю радиосвязь с берегом или судами в море, а также может подавать сигналы тревоги и бедствия с помощью установленной приемо-передающей радиостанции „Улов" /РТ-20/.

Разведка и обнаружение рыбы, а также обеспечение безопасности плавания осуществляется навигационно-промысловым эхолотом НЭЛ-5р, который питается от сети постоянного тока, напряжением 220 *в*.

Сейнер укомплектован запасными частями по нормам Регистра СССР, инвентарем и технической документацией согласно обычной судовой практике.

There is also a generator 25 *kW*, 230 *V*, at 1,500 *r. p. m.*, which supplies the circuit main 220 *V*.

The seiner has two-way wireless communication ship-to-shore and ship-to-ship at sea. Receiving-transmitting radio set "Ulov" (PT-20) provides for the possibility of transmitting alarm and distress signals.

Echo sounder НЭЛ-5р is used for fish detection and security of navigation. It operates from *D. C.* circuit main, 220 *V*.

The seiner is furnished with spare parts in accordance with the Rules of the Register of Shipping of the USSR and with supplies and technical documents as per common practice.

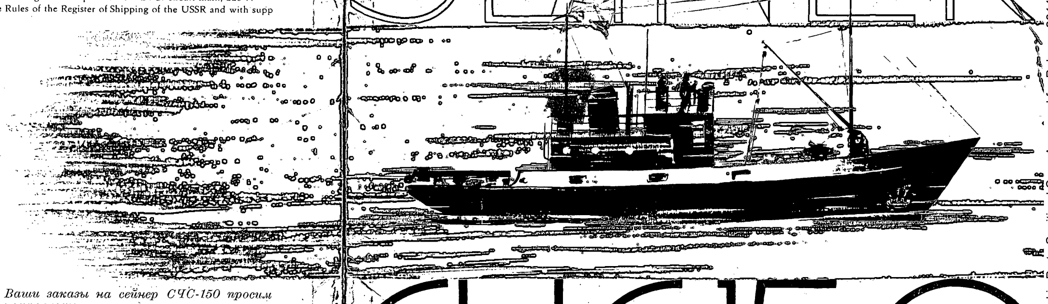
ВСЕСОЮЗНОЕ ОБЪЕДИНЕНИЕ
СУДОИМПОРТ

Ваши заказы на сейнер СЧС-150 просим направлять по адресу:
СССР, Москва, Г-200, В/О „СУДОИМПОРТ"

Please, send your orders for Seiner СЧС-150 to
V/O "SUDOIMPORT" Moscow, G-200, USSR

Внешторгиздат. Заказ № 20166. Отв.: Мокроусова Б.К., Иванова В.В. Зазулина *Л. М.*, Казакова *Л. В.*

СЕЙНЕР
SEINER



СЧС-150

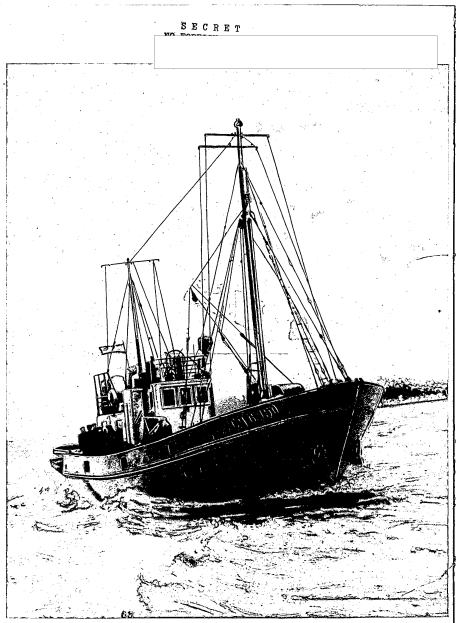


Рис. 1. Сейнер СЧС-150.

Fig. 1. Seiner СЧС-150

Сейнер СЧС-150 предназначен для лова рыбы различными способами: кошельковым неводом, дрифтерными сетями, снюрреводом и рыбонасосом на электросвет. Способы лова рыбы зависят от желания заказчика.

Сейнер рассчитан для плавания с удалением от берега до 100 миль.

Сейнер представляет собою однопалубное, дизельное, одновинтовое судно нормальных образований с рубкой, расположенной в корме от миделя, и имеющее в корме поворотную сейнерную площадку.

Корпус металлический, сварной, набран по поперечной системе набора и построен на класс Регистра СССР

★ $\frac{P}{I}$ С.

Длина	25,23 *м*
Ширина	5,6 *м*
Высота борта	2,8 *м*
Водоизмещение в грузу	124,8 т
Дедвейт	33,78 т
Осадка	2,57 *м*
Емкость трюма	47,0 *м*³
Мощность главного двигателя/дизель/	150 л. с.
Скорость хода	9 узлов
Запас дизельного топлива при непрерывной работе двигателя	на 64 часа

Корпус судна разделен пятью водонепроницаемыми поперечными переборками на 6 отсеков.

На палубе сейнера расположены электрофицированный с контролером, рабочая палубка, промысловая электролебедка, грузовой люк, рыбонасос и поворотная сейнерная площадка.

В надстройке размещаются рулевая рубка, каюта капитана, радио-рубка, камбуз, уборная, умывальная и сушилка. Отопление помещений водяное, греющее.

На крыше рулевой рубки расположены: рулевая машинка, переговорные трубы, прожекторы, машинный телеграф и главный компас.

Рыбный трюм оборудован разборными переборками, горизонтальными стеллажами и вертикальным съемным металлическим трапом.

На сейнере установлен балансирный руль. Управление рулем осуществляется из рулевой рубки и с мостика.

Спасательное устройство состоит из 2 резиновых надувных плотов/на 10 человек каждый/, спасательных поясов по числу команды и четырех спасательных кругов.

Грузовое устройство состоит из сейнерной лебедки, грузовой стрелы системы кашфас-блоков.

Оборудование промыслового устройства сейнера полностью обеспечивает организацию лова рыбы кошельковым неводом, дрифтерными сетями и на электросвет /рыбонасосом, конусными сетями и кошельковым неводом/.

Промысловые устройства для лова рыбы на электросвет конусными сетями и рыбонасосом устанавливаются на сейнере по согласованию с заказчиком.

Промысловое оборудование включает в себя следующее:

1. Неводную поворотную площадку. В зависимости от условий лова и организации работы с орудиями лова с бортов или кормы площадка может поворачиваться на 360°.
2. Деревянный ребристый ролл.
3. Неводно-выборочную машину с приводом от электродвигателя мощностью 6,5 *квт*, напряжением 220 *в*, 1 550 *об/мин*.

Тяговое усилие – 400 кг при скорости выбирания от 12 до 20 *м/мин*.

4. Промысловую вьюшку.
5. Сейнерную лебедку с приводом от электродвигателя мощностью 11 *квт*, смонтированного с лебедкой на общей фундаментной раме. Тяговое усилие лебедки 2000 кг при скорости выбирания троса 25 *м/мин*. Скорость выбирания регулируется в пределах от 10 до 60 *м/мин*.
6. Нок-балку с двумя кашфас-блоками.
7. Мальчегеры.
8. Съемный сетеподъемный ролл.
9. Кнековую планку с роуслом.
10. Дрифтер-пирус, обеспечивающий дрейф сейнера с дрифтерными сетями.
11. Рыбонасосную установку.

Рыбонасосная установка включает в себя: 1/ центробежный рыбонасос с комплектом гибких шлангов и улавливающим устройством с креплением для ламп подводного электроосвещения; 2/ электродвигатель мощностью 8 *квт*, 220 *в*, 925 *об/мин*, установленный на общем фундаменте с рыбонасосом; 3/ водоотделитель.

12. Рабочую шлюпку.

В моторном отделении расположены: главный двигатель четырехтактный, шестицилиндровый, бескомпрессорный, простого действия, вертикальный, нереверсивный, с реверс-редуктором, номинальной мощностью 150 *л.с.* при 750 *об/мин*.

На главном двигателе навешены: осушительный насос, насос охлаждения и фильтры масляный и топливный.

Seiner СЧС-150 is designed for fishing with the help of a purse seine, a drift net or a fish pump using electric light. The method of fishing is to be chosen by the Buyer.

The seiner is intended for sail within 100 miles off shore.

She is a single-deck, single-screw motor vessel of a normal shape with a bridge aft of amidships and with a rotary seine platform.

The steel hull is of welded construction framed on a transverse system and built to the class of the Register of Shipping of the USSR ★ $\frac{P}{I}$ С.

Length	25.23 m
Breadth	5.6 m
Depth	2.8 m
Displacement, loaded	124.8 t
Deadweight	33.78 t
Draught	2.57 m
Cargo space	47.0 cu. m.
Output of the main engine (Diesel)	150 *H. P.*
Speed	9 knots
Fuel supply at uninterrupted engine operation	for 64 hours

The hull of the vessel is divided by five transverse watertight bulkheads into 6 compartments.

On the deck of the seiner are placed: an el. windlass with a controller, working boat, el. fishing winch, cargo hatch, fish pump and a rotary seine platform.

The wheel house, mater's cabin, radio-room, galley, W.C., a wash-room and a drying-room are located in the bridgehouse.

Water heating is provided with heaters.

The steering engine, speaking tubes, searchlights, the engine-room telegraph and the main compass are located on the top of the wheel-house.

The fish hold is equipped with removable bulkheads, horizontal shelving and steel vertical loose ladder.

The balanced rudder is controlled from the wheel-house and from the bridge.

Life saving appliances include two life rafts (for 10 persons each), life belt for each member of the crew and four life buoys.

Cargo handling equipment comprises a seine winch, cargo derrick and a system of snatch-blocks.

Fishing arrangement of the seiner completely provides for fishing by purse seine, drift nets as well as by a fish pump, cone net or purse seine using electric light.

Arrangement for fishing by cone net and fish pump using electric light may be installed on the vessel in accordance with the Buyer's desire.

The fishing equipment includes:

1. Rotary seine platform. It can rotate at 360° depending on whether fishing is effected from the stern or from ship side.
2. Wooden ribbed roller.
3. Seine lifting machine with el. motor 6.5 *kw*, 220 *V*, 1.550 *r. p. m.*

Pull - 400 kg at 12 to 20 *m/min*.

4. Net wire drum.
5. Seine winch with el. motor 11 *kw*, installed on a common bed plate. The winch pull is 2.000 kg at 25 *m/min*.

The speed can be regulated within 10 to 60 *m/min*.

6. Beam with two snatch-blocks.
7. System of net wire guidance rollers.
8. Loose net lifting roller.
9. Chock with fair leader.
10. Drift sail providing for seiner drifting when using drift nets.
11. Fish pumping arrangement consisting of 1) centrifugal fish pump with a set of flexible hoses and a head device with clamps for underwater electrical lamps; 2) el. motor 8 *kW*, 220 *V*, 925 *r. p. m.* installed on a common bed plate with the fish pump; 3) device to separate fish from water.
12. Working boat.

The main engine is a single-acting four-stroke, six-cylinder, airless injection, vertical, non-reversible Diesel engine with a reversing reduction gear, developing 150 *H. P.* at 750 *r. p. m.* is installed in the engine-room.

On the main engine are fitted a bilge pump, a cooling pump and fuel and oil filters.

The starting of the engine is effected by compressed air or exhausted gas.

The engine is controlled from the wheel-house.

There are two separate el. circuit mains on the seiner, i. e., *D. C.* circuit main for lighting purposes throughout the vessel, 24 *V*; and *D. C.* circuit main for power consumers and outside lighting – 220 *V*.

L-05-CIL

SIDE VIEW

LAYOUT OF MAIN DECK

PRINCIPAL DATA

1. LENGTH OVERALL	L_{OA}	38.5 m.
2. RATED LENGTH	L_R	36.5 m.
3. BEAM OVERALL	B_{OA}	8.5 m.
4. RATED BEAM	B	8.0 m.
5. HEIGHT OF SIDES AMIDSHIPS	H_S	2.2 m.
6. MEAN DRAUGHT, EMPTY	T_E	0.75 m.
7. MEAN DRAUGHT, IN FULL LOAD	T_F	1.75 m.
8. OVERALL HEIGHT ABOVE BASE LINE	H_{OA}	4.5 m.
9. ENGINE HORSEPOWER		150 H.P.
10. CREW		2 men

SELF-PROPELLED HEAVY MUD HOPPER BARGE, CAPACITY 150 CU. M

SIDE VIEW AND LAYOUT OF MAIN DECK

WEIGHT, KG	
SCALE	1:50
SHEET	1
SHEETS, TOTAL	1

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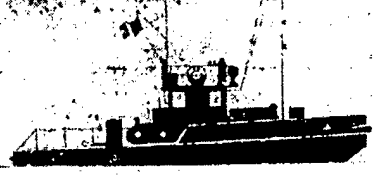
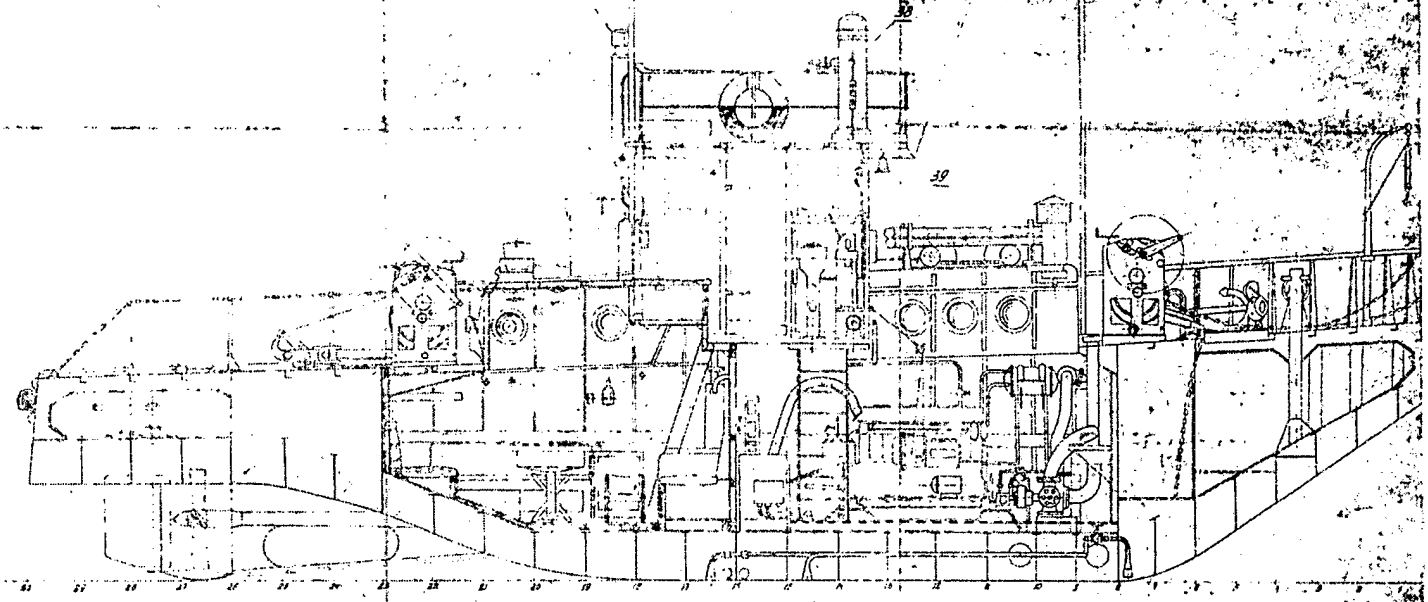
CHECKED

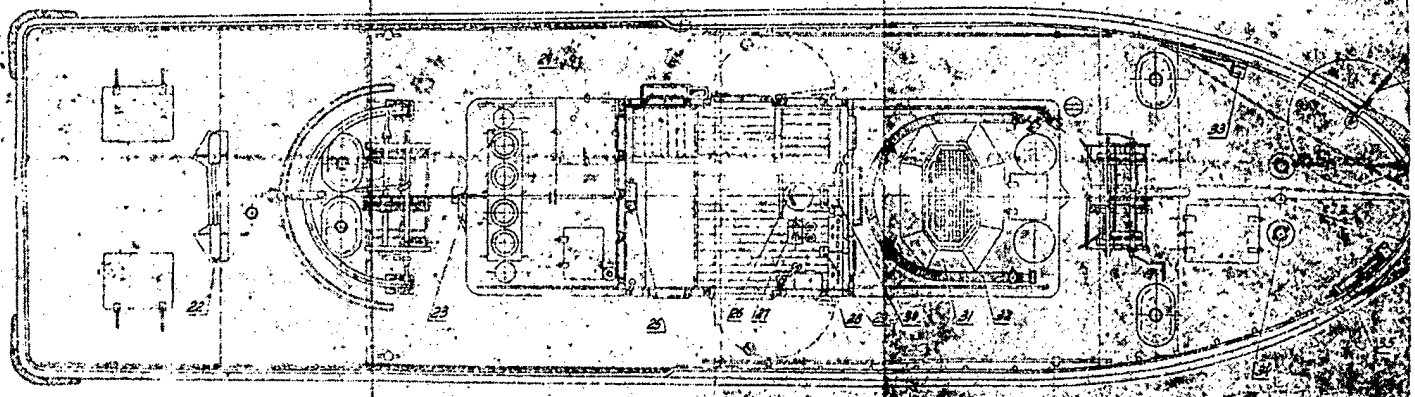
Y/o SUDOIMPORT

50X1-HUM





План главной палубы



План трюма